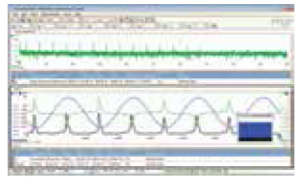
pico®
Technology

TEST & MEASUREMENT
PRODUCT CATALOGUE

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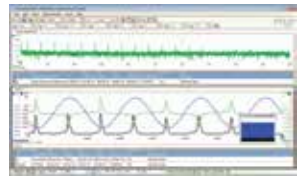


Established in 1991, Pico Technology is a worldwide leader in the field of PC-based test equipment and data acquisition. Our products regularly win industry awards, with our past achievements including:

We offer all of our customers unbeatable technical support, with our team of experts on call to answer your query or to advise you on the best product to suit your need. Our stringent quality controls ensure that you receive the highest quality products with the very best level of service. We often get comments like this from our customers :

“I would like to add that in today’s world and economic climate it is truly refreshing to learn that there are still companies in this country which market products like yours, and who you can call up and get met with the level of help and support which I have been shown.” BC, UK.

CONTENTS

PicoScope®

COMPACT AND PORTABLE UNITS

Unlike traditional benchtop instruments, Pico Technology's PC oscilloscopes are light and portable. When used with a laptop computer, a PC oscilloscope allows you to carry a complete electronics lab in the same bag as your PC.

A COMPLETE TEST AND MEASUREMENT LAB IN ONE

Every PicoScope has advanced analysis capability meaning it can be used as an oscilloscope, a spectrum analyzer and serial protocol analyzer. Many models even include a built-in function generator, arbitrary waveform generator and, in MSO (Mixed Signal Oscilloscope) models, a logic analyzer too. So with a Pico Technology PC oscilloscope you really do get a complete test and measurement lab in one cost-effective unit.

USE YOUR PC MONITOR AS A LARGE AND DETAILED COLOR DISPLAY

The screen size of a traditional oscilloscope is limited by the physical size of the product. There is no such restriction with a PC oscilloscope since the display can be as large as your computer monitor, TV, or projector screen. This makes our scopes ideal for training and education where the waveform can be projected onto an interactive whiteboard, or anywhere that ideas need sharing to an audience.

PC OSCILLOSCOPES - WE GIVE YOU MORE

NO UPGRADES NEEDED: HIGH END SOFTWARE FEATURES INCLUDED IN BASE PRICE

Most traditional oscilloscope suppliers charge customers a high premium on top of the advertised base unit price for 'optional' software upgrades. At Pico we don't believe in these optional extras and offer you everything you need in one price. Our standard software features include serial decoding, mask limit testing, advanced math and persistence display modes.

LIFETIME TECHNICAL SUPPORT

Free lifetime technical support is available for all customers, whether you would like one of our team to answer your query or to advise you on the best products to suit your needs.

5 YEAR WARRANTY

We cover all real-time oscilloscopes and data loggers with a 5 year warranty, and our sampling oscilloscopes with a 2 year warranty, against manufacturing defects.

EASILY SHARE YOUR CAPTURED WAVEFORMS AND INSTRUMENT SETTINGS

Need to show your customer or colleague the signal you have captured? Just save the waveform and email it to them. They don't have a copy of the oscilloscope software? No problem – just export it as text, an image or in a binary format for use with third-party software.

FREE SOFTWARE UPDATES

If you're lucky you can return a traditional oscilloscope to the supplier for a firmware upgrade and maybe get improved functionality. With a PicoScope new features and improved functionality can be added at any time with an easy software update. These free software updates mean that a PicoScope is one of the few things that can actually become more powerful and useful with age.

MATCHED PROBES

Pico Technology offers the best probes to match and complement our oscilloscopes. For details on which probes are included with your chosen product see page 41.

PICOSCOPE®

AFFORDABLE EXPERTISE
Pico Technology offers you a wide range of oscilloscopes to meet any requirement, all benefiting from over 20 years of expertise and with all features included in one low-cost payment. PicoScope software is included in the price, with free upgrades for life.

A 5 year warranty comes as standard with all real-time USB PicoScopes, as well as access to our technical support team for all the peace of mind you need.

HUGE BUFFER MEMORY
These days most digital oscilloscopes have high sampling rates, but many of them let you down with a tiny memory buffer which means that you can only use the maximum sampling rate on a few timebases. We offer memory options from 8 kS on our entry level PicoScope 2000 series, to an enormous 2 GS with our PicoScope 6000 Series. The 2 GS buffer memory can hold two 200 ms captures at the maximum sampling rate of 5 GS/s.

Managing all this data calls for some powerful tools, so our PicoScope software has a maximum zoom factor of over 1 million. There is segmented memory to capture the information you need, without wasting memory between events when nothing is happening.

WIDE BANDWIDTH, FAST SAMPLING RATE
PicoScopes offer a range of bandwidth and sampling rate choices to suit any application. Bandwidth options range from 5 MHz to 20 GHz, and sampling rates from 10 MS/s to 5 GS/s. For the PicoScope 6404C and PicoScope 6404D the real-time 500 MHz analog bandwidth is complemented by a sampling rate of 5 GS/s, and ETS mode boosts the maximum sampling rate for repetitive signals to up to 50 GS/s.

SIGNAL INTEGRITY
When DC accuracy and dynamic performance are essential, you can rely on PicoScope oscilloscopes. For example our 8-bit resolution PicoScope 3000 Series scopes provide a typical SFDR of 52 dB, 180 µV of noise and over 400:1 crosstalk rejection, while the 16-bit resolution PicoScope 4262 has an SFDR of 102 dB, only 8.5 µV of noise and over 50,000:1 crosstalk rejection.

FUNCTION GENERATOR & ARBITRARY WAVEFORM GENERATOR
Selected PicoScope models have a built-in function generator that can produce a range of standard signals such as sine waves, square waves and more. Many advanced units include an arbitrary waveform generator, which can produce standard signals as well as an unlimited range of user-defined waveforms.

OSCILLOSCOPES





	PicoScope 2100 Series handheld	PicoScope 2200A Series	PicoScope 2205 MSO	PicoScope 3000 Series MSOs	PicoScope 3000 Series
Description	Power & performance in your hand	Benchtop performance in a pocket-sized scope	Mixed Signal oscilloscope	Mixed Signal oscilloscopes	Fast sampling with deep memory
Channels	1	2	2 analog + 16 digital	2 or 4 analog + 16 digital	2 or 4 + EXT
Outputs	None	FG + AWG	FG + AWG	FG + AWG	FG + AWG
Bandwidth	10 or 25 MHz	10 to 200 MHz	25 MHz	50 to 200 MHz	50 to 200 MHz
Sampling	50 or 100 MS/s	100 MS/s to 1 GS/s	200 MS/s	1 GS/s	1 GS/s
Resolution (enhanced)	8 bits (12 bits)	8 bits (12 bits)	8 bits (12 bits)	8 bits (12 bits)	8 bits (12 bits)
Buffer memory	8 or 24 kS	8 to 48 kS	48 kS	64 to 512 MS	64 to 512 MS
Power	USB	USB	USB	USB or AC adaptor	USB or AC adaptor
Price from *	£119 $196 €144	£79 $131 €96	£249 $411 €301	£499 $824 €604	£349 $576 €423

* See ordering page 61 for further details.

FG - Function Generator, AWG - Arbitrary Waveform Generator.

THERE'S A PICOSCOPE FOR EVERY APPLICATION

FLEXIBLE OPTIONS

PicoScope oscilloscopes offer a wide range of vertical resolution options from 8 to 16 bits. The higher the resolution, the greater the vertical accuracy. We also have a flexible resolution oscilloscope where our breakthrough ADC technology allows you to switch from 8 to 16 bits in one unit. Choose between 1, 2, 4 or 8 channels, plus 16 digital channels on MSO models.

PRICED TO SUIT EVERY BUDGET

PicoScope oscilloscopes offer the most cost-effective way to get the specifications you want. Prices range from £79 / $131 / €96 for our single-channel handheld scope to £17,876 / $29,495 / €21,630 for our optical sampling oscilloscopes.

PICOSCOPE SOFTWARE SUPPLIED FREE WITH ALL OUR OSCILLOSCOPES

PicoScope 6 software is supplied free with all of our real-time PC oscilloscopes. We are continually seeking to improve our software with added functionality and useful features, which are available to download in software updates that are free for the life of the product. Our newsletter and website let you know when the latest software releases are available.

PicoScope 9000 Series sampling oscilloscopes come with their own software especially designed for use in high-speed serial bus analysis and signal characterization applications.

OSCILLOSCOPES






PicoScope 4000 Series	PicoScope 4262	PicoScope 4824	PicoScope 5000 Series	PicoScope 6000 Series	PicoScope 9000 Series
High resolution oscilloscopes	Digital oscilloscope for the analog world	8 Channel oscilloscope	Flexible Resolution oscilloscope	Highest performance real-time oscilloscopes	Sampling oscilloscope
2 or 4	2 + EXT	8	2 or 4 + EXT	4 + AUX input	2 electrical (+ 1 optional optical), 4 electrical
None	AWG and low distortion sine wave generator	FG + AWG	FG or FG + AWG	FG or FG + AWG	PRBS, Clock, diff. TDR/TDT
20 MHz	5 MHz	20 MHz	60 to 200 MHz	250 MHz to 1 GHz	12 or 20 GHz
80 MS/s	10 MS/s	80 MS/s	250 MS/s to 1 GS/s **	5 GS/s	200 kS/s to 1 MS/s
12 bits (16 bits)	16 bits (20 bits)	12 bits (16 bits)	8, 12, 14, 15 & 16 bits (hardware resolution +4 bits)	8 bits (12 bits)	16 bits
32 MS	16 MS	256 MS	8 to 512 MS	256 MS to 2 GS	4 kS to 32 kS
USB	USB	USB	USB or AC adaptor	AC adaptor	AC adaptor
£499 $823 €604	£749 $1235 €906	£1395 $2302 €1688	£699 $1153 €846	£1995 $3292 €2414	£5995 $9892 €7254

* See ordering page 61 for further details.

FG - Function Generator, AWG - Arbitrary Waveform Generator. ** See page 25 for full details

The PicoScope software, when used with a suitable PicoScope device, turns your PC into an oscilloscope, spectrum analyzer, chart recorder, serial protocol decoder, function generator and arbitrary waveform generator. When used with a mixed-signal oscilloscope it additionally acts as a logic analyzer. It is supplied free of charge with PicoScope oscilloscopes, and updates can be downloaded for free. It is available with a choice of over 20 interface languages.

A Commonly-used controls such as voltage range selection, timebase, memory depth and channel selection are placed on the toolbars for quick access, leaving the main display area clear for waveforms.

B Auto Setup button: Configures the timebase, voltage ranges and trigger for a stable display of your signals.

C 

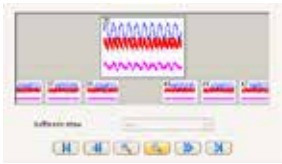
Channel Options: give access to channel-specific settings such as custom probes, resolution enhancement, offset controls and filtering.

D 

More advanced controls and functions are located in the Tools menu.

E 

Signal Generator: Allows the scope to generate standard signals or arbitrary waveforms. Includes frequency sweep and triggering options.

F 

Waveform Buffer Overview: PicoScope automatically records up to 10 000 of the most recent waveforms. You can quickly scan through to look for intermittent events. The buffer overview can be used with the mask test tools to display only failed waveforms.

G Zoom and pan tools: PicoScope provides a zoom factor of several million, which is necessary when working with deep memory scopes. Use the conventional zoom-in, zoom-out and pan tools, or try the zoom overview window for fast navigation.

H Movable axes: The vertical axes can be dragged up and down. This feature is particularly useful when one waveform is obscuring another. There's also a command to rearrange and rescale all the axes automatically.

I The PicoScope display can be as simple or as detailed as you need. Begin with a single view of one channel, and then expand the display to include any number of live channels, math channels and reference waveforms.

PicoScope is carefully designed to make the best use of the display area. You can add new scope and spectrum views, all of which are fully adjustable in size.

J Trigger marker: Shows the level and time of the trigger event. Drag with the mouse to adjust.

K Rulers: Each axis has two rulers that can be dragged onto the screen to make quick measurements of amplitude, time and frequency.

L 

Math channels: Combine input channels and saved reference waveforms using simple arithmetic, or use custom equations with trigonometric and other functions.

PICOSCOPE SOFTWARE

Ⓜ Spectrum views: One or more spectrum views can be added to show an FFT of the data in the scope view. Alternatively, PicoScope can be configured as a dedicated spectrum analyzer.

Ⓝ Zoom overview: When a scope or spectrum view is zoomed in, the overview window allows fast navigation using the mouse.

Ⓞ Automatic measurements: Display calculated measurements for troubleshooting and analysis. You can add as many measurements as you need on each view. Each measurement includes statistical parameters showing its variability.

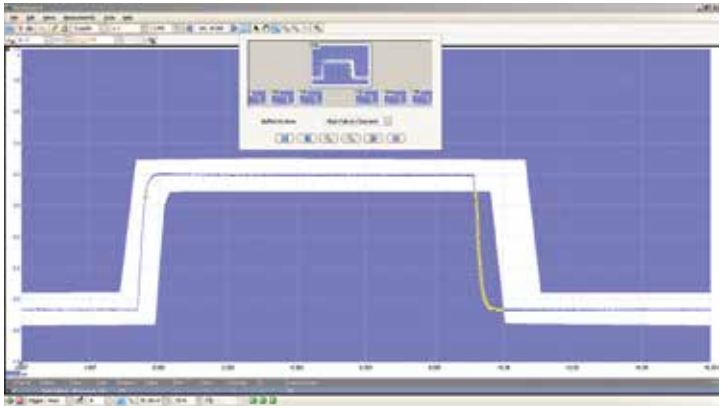
Built-in scope measurements: AC RMS, True RMS, DC Average, Cycle Time, Frequency, Duty Cycle, Falling Rate, Fall Time, Rising Rate, Rise Time, High Pulse Width, Low Pulse Width, Maximum, Minimum, Peak to Peak.

Built-in spectrum measurements: Frequency at peak, Amplitude at peak, Average amplitude at peak, Total power, THD (% and dB), THD+N, SFDR, SINAD, SNR and IMD.

Ⓟ Trigger toolbar: Commonly-used controls are on the toolbar with more advanced trigger options available from a pop-up window.

Software compatible with Windows XP SP3, Windows Vista, Windows 7 and Windows 8 (not Windows RT) 32 and 64 bit. Mac OS X and Linux support

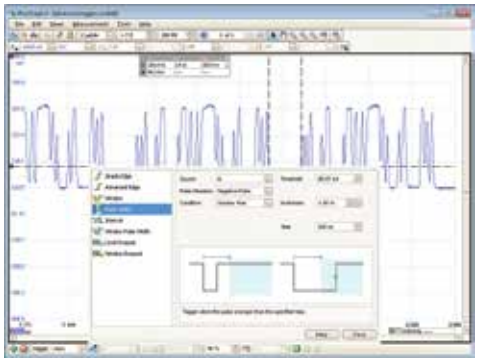
PICOSCOPE SOFTWARE



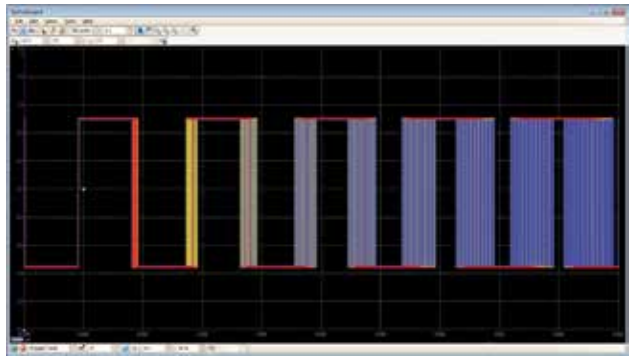
MASK LIMIT TESTING
This feature is specifically designed for production and debugging environments. Capture a signal from a known working system, and PicoScope will draw a mask around it with your specified tolerance. Connect the system under test and PicoScope will highlight any parts of the waveform that fall outside the mask area. The highlighted details persist on the display, allowing the oscilloscope to catch intermittent glitches while you work on something else. The measurements window counts the number of failures and can display other measurements and statistics at the same time.

Mask testing can be performed on both time-domain and spectral displays.

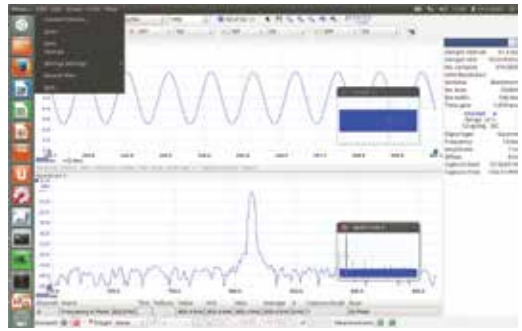
The numerical and graphical mask editors can be used separately or in combination, allowing you to enter accurate mask specifications and to modify existing masks. You can import and export masks as files.



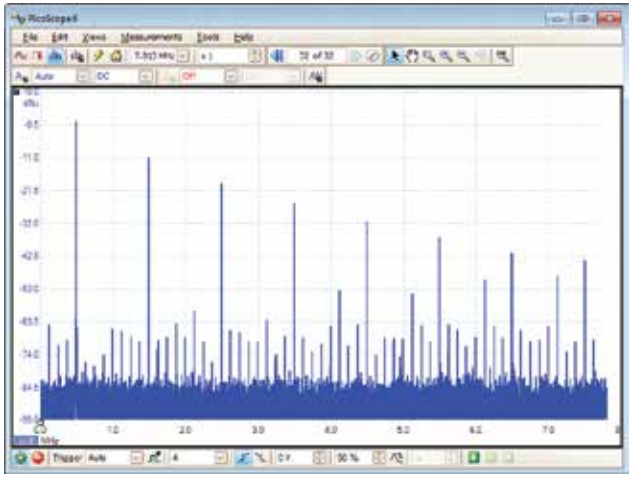
ADVANCED TRIGGERS AND RAPID TRIGGERING
PicoScope has a built-in set of advanced triggers to help you capture the data you need. Some models contain fast triggering hardware that can collect 10 000 waveforms in under 10 milliseconds. This improves your chances of capturing an infrequent glitch.

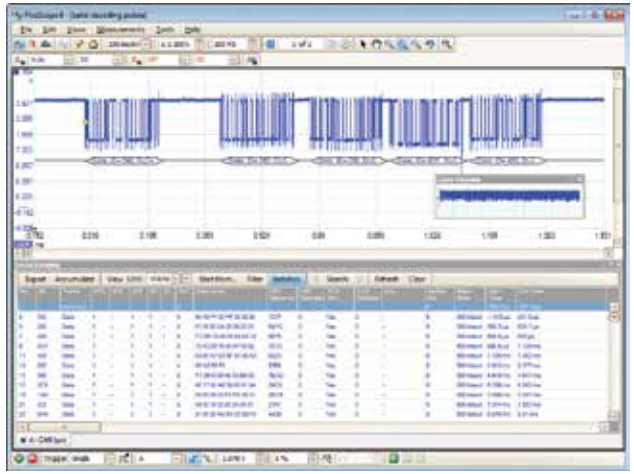


COLOR PERSISTENCE MODES
See old and new data superimposed, with new data in a brighter color or shade. This makes it easy to see glitches and drop-outs and to estimate their relative frequency. Choose between analog persistence and digital color, or create a custom display mode.



BETA VERSIONS FOR LINUX AND OS X
You can now use PicoScope on the Linux and Mac OS X platforms. Both versions can be downloaded free of charge, and include drivers allowing you to write your own software.





PICOSCOPE SOFTWARE

SPECTRUM ANALYZER
With the click of a button, you can open a new window to display a spectrum plot of the selected channels. The spectrum analyzer allows signals to be viewed in the frequency domain using FFTs of up to 1 million points. A full range of settings give you control over the number of spectrum bands, window types and display modes. A table of automatic measurements can be displayed.

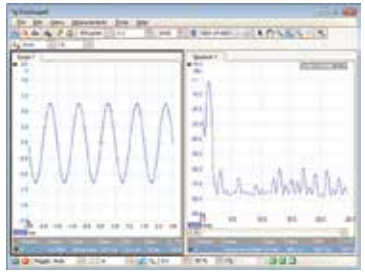
FREE SOFTWARE DEVELOPMENT KITS
Free SDKs are available for all PicoScope oscilloscopes. These allow you to write your own software on Windows, Linux and OS X platforms. Interfaces to popular third-party development tools such as MathWorks MATLAB and National Instruments LabVIEW are also included.

SERIAL BUS DECODING
The PicoScope 3000, 4000, 5000 and 6000 Series oscilloscopes are recommended for serial decoding as their deep memory allows the software to collect long, uninterrupted sequences of data. For example, the PicoScope 3206D can collect many thousands of frames of CAN bus, FlexRay, I²C, I²S, SPI, LIN or UART data over several seconds into its 512 MS memory.

To decode serial data, you set up PicoScope in the usual way to display the signal or signals of interest and then select Serial Decoding. PicoScope gives you options to define the type of serial bus protocol you are using, including a selection of all the common data rates. It then displays the data in the format of your choice: “in graph”, “in table”, or both at once.

“In graph” format shows the decoded data beneath the waveform on a common time axis, with error frames marked in red. You can zoom in on these frames to look for noise or distortion on the waveform.

“In table” format shows a list of the decoded frames, including the data and all flags and identifiers. You can set up data filtering conditions to display only the frames you are interested in, search for frames with specified properties, or define a start pattern that the program will wait for before listing the data.



PICOSCOPE 2100 SERIES

POWER AND PERFORMANCE IN YOUR HAND

"EASY TO USE" JUST GOT EASIER

Using your PicoScope handheld oscilloscope could not be easier: plug-and-play technology allows you to simply install the software, plug the oscilloscope into a USB port and start using it straight away. No need for power supplies, additional oscilloscope probes or complex installation procedures.

Designed for single-handed operation, the oscilloscope can be controlled using a button located on the top of the scope. Press the button to start the oscilloscope; it will flash green to indicate the scope is running. A beam of light will illuminate the tip of the scope so you can clearly see the area being probed. Once you've captured your signal, press the button again; it will glow red to indicate the scope has stopped.

ALL YOU NEED IN A HANDHELD OSCILLOSCOPE

With oscilloscope and spectrum analyzer functions in an incredibly easy-to-use package, a PicoScope handheld oscilloscope gives you the performance, features and quality you would expect from a PicoScope oscilloscope, all at an affordable price.

PicoScope	2104	2105
Channels	1	
Bandwidth	10 MHz	25 MHz
Sampling rate - Real time	50 MS/s	100 MS/s
- Repetitive	1 GS/s	2 GS/s
Buffer memory	8 kS	24 kS
Resolution	8 bits (12 bits enhanced)	
Input ranges	±100 mV to ±20 V in 8 ranges	
Trigger	Modes: None, auto, repeat, single Edge: Rising, falling	
Power	USB	
Warranty	5 years	
Part number	PP317	PP315
Price	£119 $196 €144	£179 $295 €217

PICOSCOPE 2205 MSO

THINK LOGICALLY

MIXED-SIGNAL CAPABILITY

The PicoScope 2205 MSO from Pico Technology is a 2+16 channel, 8-bit resolution oscilloscope. This means that along with 2 analog channels, it also has 16 digital inputs, allowing you to view your digital and analog signals simultaneously.

DIGITAL INPUTS

The 16 digital inputs can be displayed individually or in arbitrary groups labelled with binary, decimal or hexadecimal values. A separate logic threshold can be defined for each 8-bit input port. The digital trigger can be activated by any bit pattern combined with an optional transition on any input.

TRIGGERING

The PicoScope 2205 MSO offers a comprehensive set of advanced digital triggers including pulse width, windowed and dropout triggers to help you capture the data you need. Digital triggering reduces timing errors and allows our oscilloscopes to trigger on the smallest signals, even at the full bandwidth. Trigger levels and hysteresis can be set with high resolution.

Digital triggering reduces rearm delay and combined with the segmented memory allows the triggering and capture of events that happen in rapid sequence. The mask limit testing function can then scan through and highlight failed waveforms, which can then be viewed in the waveform buffer. Advanced logic triggers can be set on either the analog or digital input channels, or both.

PicoScope	2205 MSO
Analog channels	2
Analog bandwidth	25 MHz
Analog resolution	8 bits (12 bits enhanced)
Analog input ranges	±50 mV to ±20 V in 9 ranges
Digital channels	16
Digital max. frequency	100 MHz
Digital input range	±20 V
Digital threshold range	±5 V
Max. sampling rate — Ch A / Ch A + 1 digital port:	200 MS/s
1 or 2 digital ports:	200 MS/s
All other combinations:	100 MS/s
Buffer memory	48 kS
AWG	Yes
Power	USB
Warranty	5 years
Part number - includes probes and clips	PP798
Price	£299 $495 €374
Part number - scope only	PP823
Price	£249 $411 €301

PICOSCOPE 2200A SERIES

BENCHTOP PERFORMANCE IN A POCKET-SIZED SCOPE

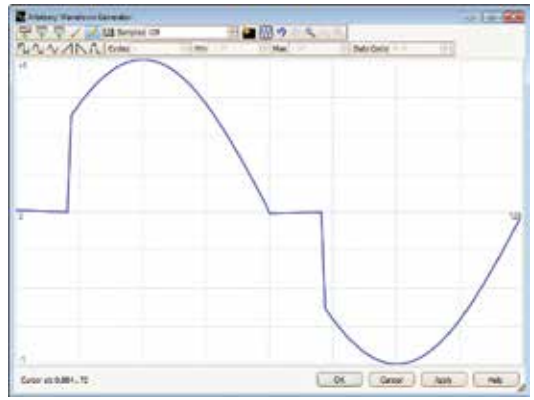
PICOSCOPE: POWERFUL, PORTABLE AND VERSATILE
These handy, low-cost oscilloscopes offer the powerful performance and reliability of a PicoScope in an exceptionally small form factor. Weighing less than 0.2 kg (7 oz), they slip easily into your pocket or laptop bag; perfect for the engineer on the move!

Available bandwidths range from 10 MHz to 200 MHz, making these oscilloscopes ideal for a wide range of applications, whether it's design, research, test, education, service, or repair. The fast USB connection to your PC makes functions such as printing, copying, and emailing your data from the field quick and easy. It also means there is no need to carry around an external power supply.

THE FIRST USB-POWERED 1 GS/s OSCILLOSCOPES!
The original PicoScope 2000 Series scopes were the first USB-powered scopes to offer a 1 GS/s real-time sampling rate, previously only possible with mains-powered instruments. For repetitive signals, Equivalent Time Sampling (ETS) mode boosts the maximum effective sampling rate to 10 GS/s, allowing even finer timing resolution.

ARBITRARY WAVEFORM AND FUNCTION GENERATORS
All PicoScope 2200A Series oscilloscopes have built-in function generators with sine, square, triangle, DC level and many more standard waveforms.

An arbitrary waveform generator (AWG) is also included. Waveforms can be imported from data files or created and modified using the built-in graphical AWG editor.



PicoScope	2204A	2205A	2206A	2207A	2208A
Channels	2				
Bandwidth	10 MHz	25 MHz	50 MHz	100 MHz	200 MHz
Sampling rate - Real time	100 MS/s	200 MS/s	500 MS/s	1 GS/s	1 GS/s
- Repetitive	2 GS/s	4 GS/s	5 GS/s	10 GS/s	10 GS/s
Buffer memory	8 kS	16 kS	32 kS	40 kS	48 kS
Resolution	8 bits (12 bits enhanced)				
Input ranges	±50 mV to ±20 V in 9 ranges				
Trigger	Modes: None, auto, repeat, single Advanced: Rising, falling, dual edge, hysteresis, window, pulse width, window pulse width, window dropout, interval, logic, delayed		As PicoScope 2204A & 2205A plus rapid (segmented memory) mode		
AWG	Function generator to 100 kHz + 2 MS/s AWG		Function generator to 1 MHz + 20 MS/s AWG		
Power	USB				
Warranty	5 years				
Part number - includes probes	PP906	PP907	PP908	PP909	PP910
Price	£99 $163 €120	£149 $246 €180	£249 $411 €301	£349 $576 €422	£499 $823 €604
Part number - without probes	PP917	PP966	-	-	-
Price	£79 $131 €96	£129 $213 €157	-	-	-

PICOSCOPE 3000 SERIES

2- OR 4- CHANNEL OSCILLOSCOPES AND MSOS

USB 3.0

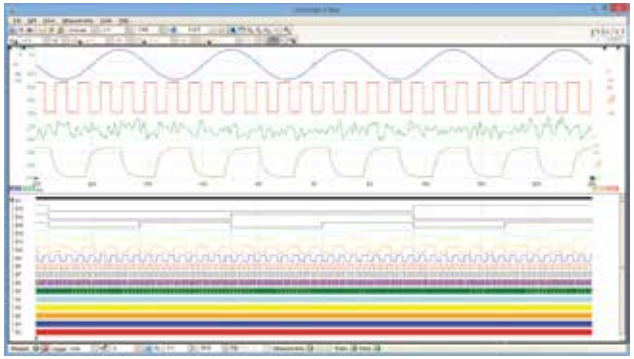
POWER, PORTABILITY, AND PERFORMANCE

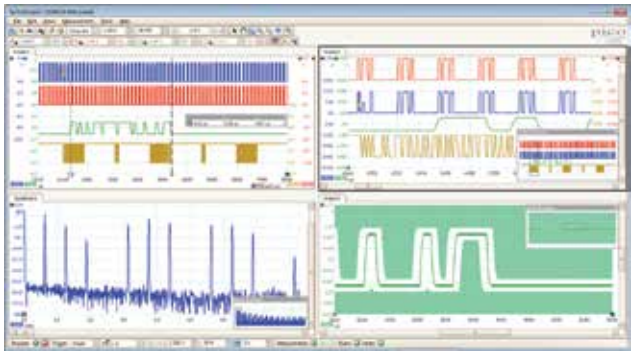
The PicoScope 3000 Series PC oscilloscopes are small, light, and portable, while offering the high-performance specifications required by engineers in the lab or on the move.
These oscilloscopes offer 2 or 4 analog channels, plus an additional 16 digital channels on the MSO models. The flexible, high resolution display options enable you to view and analyze each signal in fine detail.

Operating together with the PicoScope 6 software, these devices offer an ideal, cost-effective package for many applications, including embedded systems design, research, test, education, service, and repair.

PicoScope	3203D	3203D MSO	3204D	3204D MSO	3205D	3205D MSO	3206D	3206D MSO	3403D	3403D MSO	3404D	3404D MSO	3405D	3405D MSO	3406D	3406D MSO
Channels	2A	2A+16D	2A	2A+16D	2A	2A+16D	2A	2A+16D	4A	4A+16D	4A	4A+16D	4A	4A+16D	4A	4A+16D
Bandwidth	50 MHz		70 MHz		100 MHz		200 MHz		50 MHz		70 MHz		100 MHz		200 MHz	
Sampling rate - Real time	1 GS/s															
Buffer memory	64 MS		128 MS		256 MS		512 MS		64 MS		128 MS		256 MS		512 MS	
Resolution (enhanced)	8 bits (12 bits)															
Signal generator	AWG & Function generator															
Input ranges	±50 mV to ±20 V in 9 ranges															
Trigger	Modes: None, auto, repeat, single, rapid (segmented memory) Advanced: Edge, window, pulse width, window pulse width, dropout, window dropout, interval, logic, runt pulse ETS mode (channel A only): Rising edge, falling edge Digital inputs: Pattern, edge, combined pattern and edge, pulse width, dropout, interval, logic															
Power	USB								USB or AC adaptor							
Warranty	5 years															
Part number - includes probes	PP958	PP956	PP959	PP931	PP960	PP932	PP961	PP933	PP962	PP957	PP963	PP934	PP964	PP935	PP965	PP936
Price	£349 $576 €423	£499 $824 €604	£449 $741 €544	£599 $989 €725	£599 $989 €725	£749 $1236 €907	£849 $1401 €1028	£999 $1649 €1209	£549 $906 €665	£699 $1154 €846	£699 $1154 €846	£849 $1401 €1028	£949 $1566 €1149	£1095 $1807 €1325	£1295 $2137 €1567	£1445 $2385 €1749

For full product specification please visit www.picotech.com A=analog and D=digital





HIGH BANDWIDTH AND SAMPLING RATE

Despite their compact size and low cost, there is no compromise on performance. With input bandwidths up to 200 MHz, the PicoScope 3000 Series scopes can measure a wide range of signal types, from DC and baseband into RF and all the way up to VHF.

A real-time sampling rate of 1 GS/s allows detailed display of high frequencies. For repetitive signals, the maximum effective sampling rate can be boosted to 10 GS/s using Equivalent Time Sampling (ETS) mode. With a sampling rate of at least five times the input bandwidth, PicoScope 3000 Series oscilloscopes are well equipped to capture high-frequency signal detail.

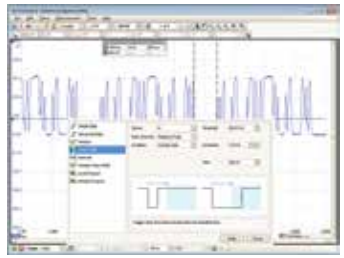
DEEP MEMORY

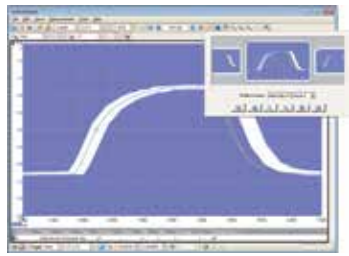
PicoScope 3000 Series oscilloscopes offer a huge buffer memory, allowing them to sustain high sampling rates across long timebases. For example, using the 512 MS buffer the PicoScope 3206 and 3406 models can sample at 1 GS/s all the way down to 50 ms/div (500 ms total capture time).

Powerful tools are included to allow you to manage and examine all of this data. As well as functions such as mask limit testing and color persistence mode, the PicoScope 6 software enables you to zoom into your waveform by several million times.

ADVANCED DISPLAY

The PicoScope software provides advanced detail and clarity for viewing your signals. The majority of the display area is dedicated to the waveform, ensuring that a huge amount of data can be seen at once. Even with a laptop, the viewing area for a PicoScope USB oscilloscope delivers superior size, resolution, and flexibility when compared to a typical benchtop oscilloscope.





PICOSCOPE 3425

DIFFERENTIAL INPUT PC OSCILLOSCOPE

MEASURE FLOATING OR NON-GROUND-REFERENCED SIGNALS

With a maximum common mode and differential input range of 400 V, the PicoScope 3425 is capable of measuring both high-voltage and low-level signals. Typical high-voltage applications include capturing waveforms from switch mode power supplies, telephone cables, motor inverters and hybrid vehicles. The high-impedance differential inputs also allow measurements on sensitive amplifiers and from bridge type sensors for pressure, load and strain.

EASY AND INEXPENSIVE

With the PicoScope 3425 you don't need expensive differential preamplifiers or probes, as all the necessary circuitry is built in. Just connect the screened differential cables (supplied) to the circuit under test and use the device like a normal oscilloscope. The PicoScope software gives you all the advanced features of our standard oscilloscopes, such as math and reference waveforms, mask limit testing and automatic measurements. Data logging software is also included in case you need to make long-term measurements.

PicoScope	3425
Channels	4
Bandwidth	5 MHz
Sampling rate	20 MS/s
Buffer memory	512 kS
Resolution	12 bits (16 bits enhanced)
Input ranges	±100 mV to ±400 V in 12 ranges
Trigger	Modes: None, Auto, Repeat, Single, Advanced: rising, falling or dual edge with adjustable hysteresis, window, pulse width, window pulse width, dropout, window dropout, interval
Power	USB
Warranty	5 years
Part number	PP454
Price	£975 $1608 €1179


pico
Technology
www.picotech.com
PicoScope 4000 Series
A
B
C
D
E
F
G
H
± 50 V

PICOSCOPE 4224 & 4424

HIGH-RESOLUTION OSCILLOSCOPES

A POWERFUL HIGH RESOLUTION OSCILLOSCOPE
The 2 channel PicoScope 4224 and the 4 channel PicoScope 4424 are high-resolution oscilloscopes that are suitable for general, scientific and field–service use. With 12 bit resolution (adjustable up to 16 bits in enhanced resolution mode) and 1% vertical accuracy they also make an excellent choice for noise, vibration and mechanical analysis.

MEASURE SMALL SIGNALS TO LARGE VOLTAGES
The PicoScope 4000 Series have input ranges from ±50 mV to ±100 V so you can measure small signals from sensors as well as higher voltages from power supply circuits and motor drives.

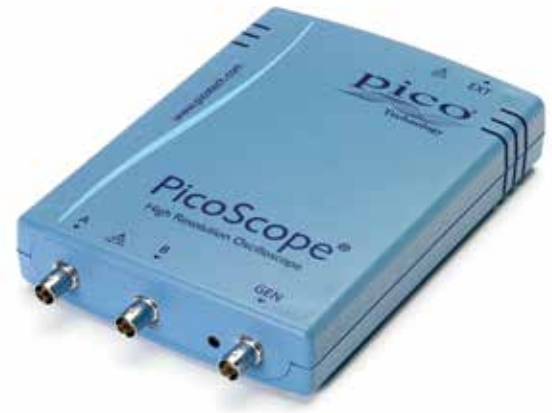
DEEP MEMORY
The 32 M sample buffer is 'always on'. There is never a compromise between buffer size and waveform update rate, because the PicoScope 4000 Series always maximises both at the same time. Now you can capture every waveform with full detail.

PicoScope	4224	4424
Channels	2	4
Bandwidth	20 MHz	
Sampling rate - Real time	80 MS/s	
Buffer memory	32 MS	
Resolution	12 bits (16 bits enhanced)	
Input ranges	±50 mV to ±100 V in 11 ranges	
Trigger	Modes: Auto, repeat, single, rapid, none Advanced: rising & falling edge, edge with hysteresis, pulse width, runt pulse, dropout, windowed, save to file on trigger	
Power	USB	
Warranty	5 years	
Part number - Scope only	PP492	PP493
Price	£499 $823 €603	£799 $1318 €966
Part number - includes probes	PP478	PP479
Price	£519 $856 €627	£825 $1361 €998

PICOSCOPE 4262

A DIGITAL OSCILLOSCOPE FOR THE ANALOG WORLD

16 BITS



LOW NOISE, LOW DISTORTION

The PicoScope 4262 from Pico Technology is a 2-channel, 16-bit high-resolution oscilloscope with a built-in low-distortion signal or function generator. With its 5 MHz bandwidth, it can easily analyze audio, ultrasonic and vibration signals, characterize noise in switched mode power supplies, measure distortion, and perform a wide range of precision measurement tasks.

FULL-FEATURED OSCILLOSCOPE

The PicoScope 4262 is a full-featured oscilloscope, with a function generator and arbitrary waveform generator that includes a sweep function to enable frequency response analysis. It also offers mask limit testing, math and reference channels, advanced digital triggering, serial decoding, automatic measurements and color persistence display modes.

DESIGNED FOR THE ANALOG WORLD

When used in spectrum analyzer mode, the scope provides a menu of eleven automatic frequency-domain measurements such as IMD, THD, SFDR and SNR. Its performance is so good that it rivals many dedicated audio analyzers and dynamic signal analyzers costing several times the price. Most digital oscilloscopes have been designed for viewing fast digital signals, and the trend has been to use new technology solely to increase sampling rate and bandwidth. With the PicoScope 4262 we have focused on what's important for measuring analog signals: increasing the resolution, improving dynamic range, and reducing noise and distortion.

PicoScope	4262
Channels	2 + Ext trigger
Bandwidth	5 MHz (4 MHz on ±20 mV range, 3 MHz on ±10 mV range)
Sampling rate - Real time	10 MS/s
Buffer memory	16 MS
Resolution (enhanced)	16 bits (20 bits)
Input ranges	±10 mV to ±20 V in 11 ranges
Trigger	Modes: None, auto, repeat, single, rapid (segmented memory) Advanced: Rising, falling, edge, window, pulse width, dropout, interval, logic, runt pulse
Power	USB
Warranty	5 years
Part number - includes probes	PP799
Price	£749 $1236 €906

PICOSCOPE 4824

8 CHANNELS, HIGH RESOLUTION

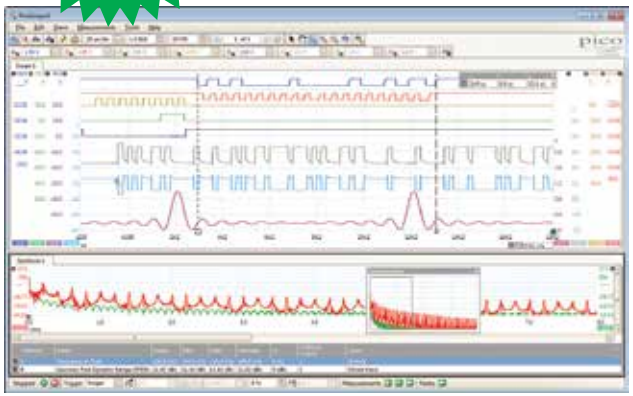
8 CHANNEL OSCILLOSCOPE
The PicoScope 4824 is a low cost, portable solution for multi-input applications.

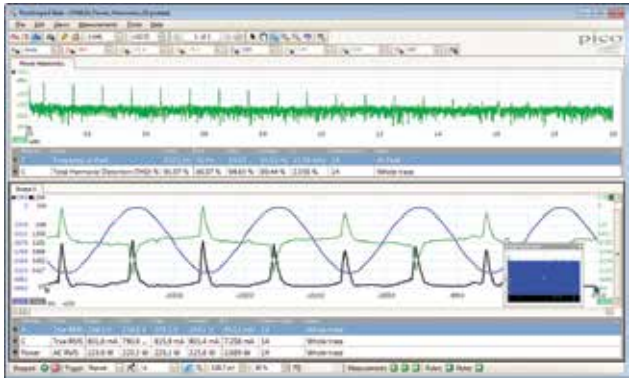
With 8 high-resolution analog channels you can easily analyze audio, ultrasonic, vibration and power waveforms, check timing of complex systems, and perform a wide range of precision measurement tasks on multiple inputs at the same time. All of this fits into the same small footprint as Pico's existing 2- and 4-channel models. The BNC connectors still accept the vast majority of probes and accessories with ample spacing of 20 mm.

Featuring a high 12-bit vertical resolution, a bandwidth of 20 MHz, 256 MS buffer memory, and a fast sampling rate of 80 MS/s, the PicoScope 4824 has the power and functionality to deliver accurate results. It also features a deep memory to analyse multiple serial buses such as UART, I2C, SPI, CAN and LIN plus control and driver signals.

ARBITRARY WAVEFORM AND FUNCTION GENERATORS
In addition, the PicoScope 4824 has a built-in low-distortion, 1 MHz, 14-bit arbitrary waveform generator (AWG), which can be used to emulate missing sensor signals during product development, or to stress test a design over the full intended operating range. Waveforms can be imported from PicoScope data files or created and modified using the graphical AWG editor. A function generator is also included, with sine, square, triangle, DC level and many more standard waveforms. As well as level, offset and frequency controls, advanced options allow you to sweep over a range of frequencies. Combined with the spectrum peak hold option, this creates a powerful tool for testing amplifier filter and control system responses.

USB 3.0





EXAMPLE APPLICATION: COMPLEX EMBEDDED SYSTEMS

When debugging an embedded system with a scope, you can quickly run out of channels. You may need to look at an I^2C or SPI bus at the same time as multiple power rails, DAC outputs and logic signals. With eight channels, the PicoScope 4824 can cope with all of this. Choose whether to decode up to eight serial buses, with analog waveforms and decoded data both visible, or a combination of serial buses and other analog or digital signals. PicoScope provides advanced triggering on all channels, so you can search for runt pulses, drop-outs and noise as well as looking for data patterns using the 4-input Boolean logic trigger.

PicoScope	4824
Channels	8
Bandwidth (-3 dB)	20 MHz (50 mV to 50 V ranges) 10 MHz (10 mV and 20 mV ranges)
Maximum sampling rate (real-time)	80 MS/s (1 to 4 channels in use) 40 MS/s (5 to 8 channels in use)
Buffer memory	256 MS
Hardware resolution (Enhanced vertical resolution)	12 bits (up to 16 bits)
Signal generator	Function generator & AWG 80 MS/s
Input ranges	±10 mV to ±50 V full scale, in 12 ranges
Trigger	Edge, window, pulse width, interval, dropout, runt, logic
Power	USB
Warranty	5 years
Part number	PP916
Price	£1395 $2302 €1688

PICOSCOPE 5000 SERIES

FLEXIBLE RESOLUTION, HIGH PERFORMANCE AND HIGH SPEED

FLEXIBLE RESOLUTION - FROM 8 TO 16 BITS

Most digital oscilloscopes gain their high sampling rates by time-interleaving multiple 8 bit ADCs. Despite careful design, the interleaving process introduces errors that always make the dynamic performance worse than the performance of the individual ADC cores.

The new PicoScope 5000 Series scopes have a significantly different architecture in which multiple high-resolution ADCs can be applied to the input channels in different time-interleaved and parallel combinations to boost either the sampling rate or the resolution.

In time-interleaved mode, the ADCs are interleaved to provide 1 GS/s at 8 bits. Interleaving reduces the performance of the ADCs, but the resulting 60 dB SFDR is still much better than oscilloscopes that interleave 8 bit ADCs. This mode can also provide 500 MS/s at 12 bits resolution. (see figure 1)

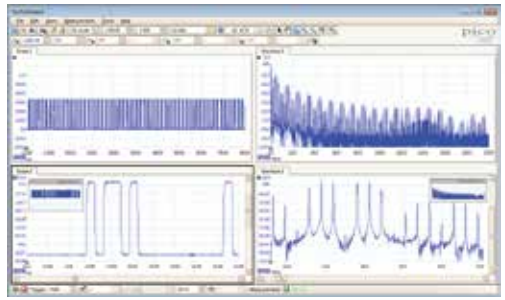
In parallel mode, multiple ADCs are sampled in phase on each channel to increase the resolution, improve dynamic performance and reduce noise. Using parallel mode, resolution is increased to 14 bits at 125 MS/s per channel (70 dB SFDR). If only two channels are required then resolution can be increased to 15 bits, and in single-channel mode all the ADCs are combined to give a 16 bit mode at 62.5 MS/s. The software gives the choice of selecting the resolution or leaving the scope in “auto resolution” mode where the highest resolution possible is used for the chosen settings.

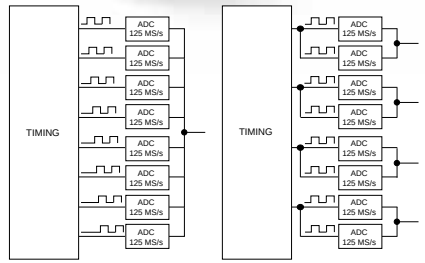
FRONT END DESIGN

Pico has over 20 years’ experience in the design of high-resolution oscilloscopes but, even so, developing a new analog front end to support an oscilloscope that can be switched between different resolutions was a significant challenge. Careful attention was required to support the high-resolution modes (with low noise, low distortion and bandwidth flatness) while maintaining the bandwidth, slew rate and pulse response necessary for the faster 8 bit mode.

PORTABILITY AND POWER

Pico Technology oscilloscopes are small, light and portable. In 2 channel mode the 5000 Series scopes can be powered from USB only, making them ideal for the engineer on the move. The external power supply is only needed when using 3 or 4 channels.





(figure 1)
The PicoScope 5000 Series scopes use multiple high-resolution ADCs in either interleaved or simultaneous mode to give low-noise sampling at resolutions from 8 bits to 16 bits.

PicoScope	5242A	5442A	5242B	5442B	5243A	5443A	5243B	5443B	5244A	5444A	5244B	5444B
Channels	2	4	2	4	2	4	2	4	2	4	2	4
Bandwidth	All modes: 60 MHz				8 to 15 bit modes: 100 MHz 16 bit mode: 60 MHz				8 to 15 bit modes: 200 MHz 16 bit mode: 60 MHz			
Max. sampling rate Any 1 channel Any 2 channels Any 3 channels 4 channels	8 bit mode 1 GS/s 500 MS/s 250 MS/s 250 MS/s				12 bit mode 500 MS/s 250 MS/s 125 MS/s 125 MS/s				14 bit mode 125 MS/s 125 MS/s 125 MS/s 125 MS/s			
	15 bit mode 125 MS/s 125 MS/s - -				16 bit mode 62.5 MS/s - - -							
Sampling rate (repetitive sampling)	2.5 GS/s				5 GS/s				10 GS/s			
Buffer memory (8-bit) *	16 MS		32 MS		64 MS		128 MS		256 MS		512 MS	
Buffer memory (≥ 12-bit) *	8 MS		16 MS		32 MS		64 MS		128 MS		256 MS	
Hardware resolution ** (Enhanced vertical resolution)	8 bits, 12 bits, 14 bits, 15 bits, 16 bits (Hardware resolution + 4 bits)											
Signal generator	Function Generator		FG + AWG		Function Generator		FG + AWG		Function Generator		FG + AWG	
Input ranges	±10 mV to ±20 V full scale, in 11 ranges											
Trigger	None, Auto, Repeat, Single, Rapid (segmented memory) Advanced triggers: Edge, Window, Pulse width, Window pulse width, Dropout, Window dropout, Interval, Runt pulse, Logic											
Power	USB or AC adaptor											
Warranty	5 years											
Part number - includes probes	PP863	PP869	PP864	PP870	PP865	PP871	PP866	PP872	PP867	PP873	PP868	PP874
Price	£699 $1153 €846	£949 $1566 €1148	£799 $1318 €967	£1099 $1813 €1330	£899 $1483 €1088	£1249 $2061 €1511	£999 $1648 €1209	£1399 $2308 €1693	£1099 $1813 €1330	£1549 $2556 €1874	£1199 $1978 €1451	£1699 $2803 €2056

* Shared between active channels

** Maximum effective resolution is limited on the lowest voltage ranges: ±10 mV = 8 bits • ±20 mV = 12 bits. All other ranges can use full resolution.

PICOSCOPE 6000 SERIES

HIGH BANDWIDTH, HIGH SAMPLING RATE
With a 250 MHz to 500 MHz analog bandwidth complemented by a real-time sampling rate of 5 GS/s, the PicoScope 6000 Series scopes can display single-shot pulses with 200 ps time resolution. ETS mode boosts the maximum sampling rate to 50 GS/s, giving higher timing resolution for repetitive signals.

ULTRA-DEEP BUFFER MEMORY, MORE THAN ANY OTHER OSCILLOSCOPE
The PicoScope 6000 Series gives you the deepest buffer memory available as standard on any oscilloscope. Other oscilloscopes have high maximum sampling rates, but without deep memory they cannot sustain these rates on long timebases.

ADVANCED TRIGGERS
As well as the standard range of triggers found on most oscilloscopes, the PicoScope 6000 Series scope has a built-in set of advanced triggers to help you capture the data you need. Digital triggering gives access to the full bandwidth and vertical resolution of each input channel.

FAST DATA TRANSFERS
The new SuperSpeed USB 3.0 interface delivers data to your PC even faster than before, giving higher throughput for the advanced data processing features in the PicoScope software.

PICOSCOPE 6000 SERIES

THE HIGHEST PERFORMANCE PC OSCILLOSCOPE AVAILABLE

ULTIMATE PERFORMANCE

The PicoScope 6404C and 6404D have the highest bandwidth and sampling rate of any real-time USB oscilloscope available, for much less than the cost of a comparable benchtop oscilloscope. High sampling speed means that they can display single-shot pulses with a time resolution as short as 200 ps. Waveform Capture Rates in excess of 100 000 per second are enabled in Digital Persistence Fast Mode, which helps to capture intermittent and elusive glitches.

DEEP MEMORY

The PicoScope 6404D also has the deepest buffer memory available as standard on any oscilloscope. Deep memory allows the scope to sample at higher speeds for longer periods without gaps. For example, even at the maximum sampling rate of 5 GS/s, the PicoScope 6404D can capture 200 ms of uninterrupted data. Zoom, pan and buffer overview tools in the PicoScope software make it easy to find details of interest.

PicoScope	6402C	6402D	6403C	6403D	6404C	6404D
Channels	4					
Bandwidth	250 MHz		350 MHz		500 MHz	
Sampling Rate	5 GS/s					
Memory	256 MS	512 MS	512 MS	1 GS	1 GS	2 GS
Resolution (enhanced)	8 bits (12 bits)					
AWG or function generator	Function Generator	FG + AWG	Function Generator	FG + AWG	Function Generator	FG + AWG
Input ranges	±50 mV to ±20 V in 9 ranges					
Trigger	Modes: Auto, rapid, repeat, single, none. Advanced: rising & falling edge, edge with hysteresis, logic level, pulse width, runt pulse, dropout, window, interval, level, window dropout, window pulse width, delayed, save to file on trigger					
Power	AC adaptor					
Warranty	5 years					
Part number - includes probes	PP884	PP885	PP886	PP887	PP888	PP889
Price	£1995 $3292 €2414	£2495 $4117 €3019	£2995 $4942 €3624	£3495 $5767 €4229	£3995 $6592 €4834	£4495 $7417 €5439

For full product specification please visit www.picotech.com

PICOSCOPE 6000 SERIES PROBES

Probe specifications	TA150	TA133
Attenuation	10:1	
Resistance at probe tip	10 MΩ	
Capacitance at probe tip	9.5 pF	
Scope input impedance	1 MΩ	
Compatibility	PicoScope 6402C/D, 6403C/D	PicoScope 6404C/D
Probe bandwidth (3 dB)	350 MHz	500 MHz
System bandwidth (3 dB)		
Risetime (10% to 90%)	1 ns	700 ps
Compensation range	10 to 25 pF	
Safety standard	IEC/EN 61010-031	
Cable length	1.3 m	
Price	£125 $206 €151	£150 $248 €182

PicoScope 6000 Series oscilloscopes are supplied complete with four high-impedance probes. Replacement probes are available.

These probes have been designed for use with individual models of the PicoScope 6000 Series and are factory-compensated to match each scope's input characteristics.

Each high-quality probe is supplied with a range of accessories for convenient and accurate high-frequency measurements.

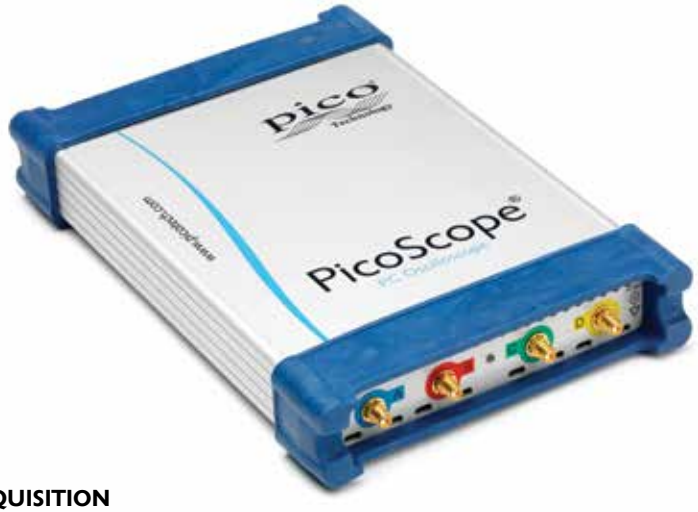
Accessories included:

TA150

- Instruction manual
- Solid tip 0.5 mm
- Coding rings, 3 x 4 colors
- Ground lead 15 cm
- Ground spring 2.5 mm
- Trim tool
- Insulating cap 2.5 mm
- Sprung hook 2.5 mm

TA133

- Instruction manual
- Solid tip 0.5 mm
- Coding rings, 3 x 4 colors
- Ground lead 15 cm
- Ground spring 2.5 mm
- Trim tool
- Insulating cap 2.5 mm
- Sprung hook 2.5 mm
- Spring tip 0.5 mm
- Ground blade 2.5 mm
- 2 self-adhesive copper pads
- Protection cap 2.5 mm
- IC caps 0.5 to 1.27 mm pitch
- PCB adapter kit 2.5 mm



PICOSCOPE 6407

1 GHz BANDWIDTH HIGH-PERFORMANCE USB DIGITIZER

HIGH-SPEED DATA ACQUISITION
The PicoScope 6407 Digitizer is a compact USB plug-in device that turns your PC or laptop into a high-speed digitizer. It can easily digitize a 1 GHz sine wave with a timing resolution of 200 ps.

HUGE BUFFER MEMORY
The PicoScope 6407 digitizer has a memory depth of 1 billion samples. Other digitizers have high maximum sampling rates, but without deep memory they cannot sustain these rates on long timebases. The PicoScope 6407 can sample at 5 GS/s at timebases all the way down to 20 ms/div, giving a total acquisition time of 200 ms, using the PicoScope software included.

The large buffer enables the use of segmented memory. Each captured waveform segment is stored in the buffer so you can rewind and review thousands of previous waveforms. No longer will you see a glitch on the screen only for it to vanish before you stop the scope.

ADVANCED TRIGGERS
As well as the standard range of triggers found on all oscilloscopes, the PicoScope 6407 offers a comprehensive set of advanced triggers including pulse width, windowed and dropout triggers to help you capture the data you need.

SOFTWARE DEVELOPMENT KIT
Use the free SDK to develop custom applications. The driver allows the capture of unlimited data sets at over 10 MS/s. Example code for LabVIEW, MATLAB and C-compatible languages is included.

PicoScope	6407
Channels	4 (SMA)
Bandwidth	1 GHz
Sampling rate - Real time	5 GS/s
Buffer memory	1 GS
Resolution (enhanced)	8 bits (12 bits)
Signal Generator	FG + AWG
Input range	±100 mV *
Trigger	Modes: Auto, rapid, repeat, single, none, Advanced: rising & falling edge, edge with hysteresis, logic level, pulse width, runt pulse, dropout, window, delayed, save to file on trigger
AUX trigger bandwidth	25 MHz
Power	AC adaptor
Warranty	5 years
Part number	PP795
Price	£5995 $9891 €7253

* If your input signal is larger than ±100 mV, adding an external 50 ohm attenuator to the input SMA connector will expand the analog input range. Choose one of our attenuators from page 34.

PicoScope 9000

THE NEW FACE OF SAMPLING OSCILLOSCOPES

SAMPLING OSCILLOSCOPES

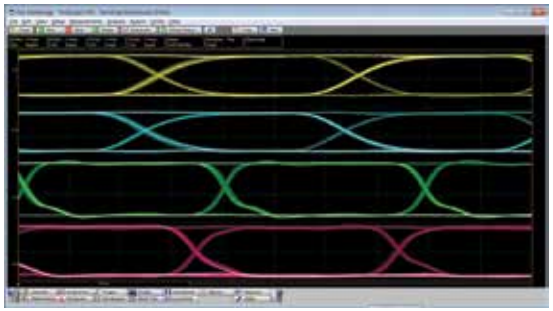
THE ULTIMATE IN PRICE AND PERFORMANCE
If you need to measure high-speed repetitive signals, the PicoScope 9000 sampling oscilloscopes deliver the ultimate performance in their price range. The PicoScope 9000 Series oscilloscopes are designed to look at repetitive signals and are therefore not suitable for real-time or single-shot applications. The PicoScope 9000 Series are ideal for testing communications, computers and consumer electronics with multi-gigabit data transmission.

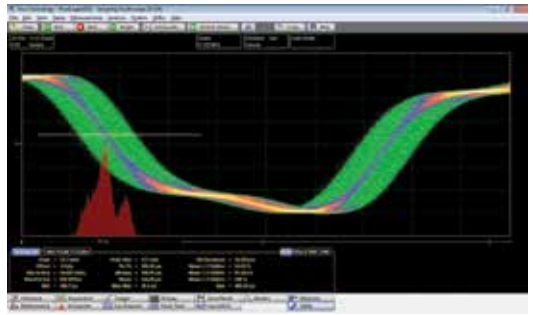
TDR models are suited for electrical signal path characterization on PCBs and electrical cables.

Pico Technology offer two series of sampling scopes:
The PicoScope 9200 Series sampling oscilloscopes have a bandwidth of 12 GHz with prices starting from under $10 000.
The PicoScope 9300 Series of sampling oscilloscopes have a bandwidth of 20 GHz with prices starting from under $15 000.

This is less than half the price of comparable sampling oscilloscopes. Unlike other manufacturers, all software functionality is included in the cost of the oscilloscope, and software updates are provided free of charge for the life of the product.

SAMPLING OSCILLOSCOPES COMPARED TO REAL-TIME OSCILLOSCOPES:
- Can only capture repetitive waveforms
- Have lower real-time sampling rate to increase ADC resolution
- Lower noise floor
- Wider bandwidth for lower budget
- Lower intrinsic jitter
- Lower cost of ownership compared to benchtop sampling scopes

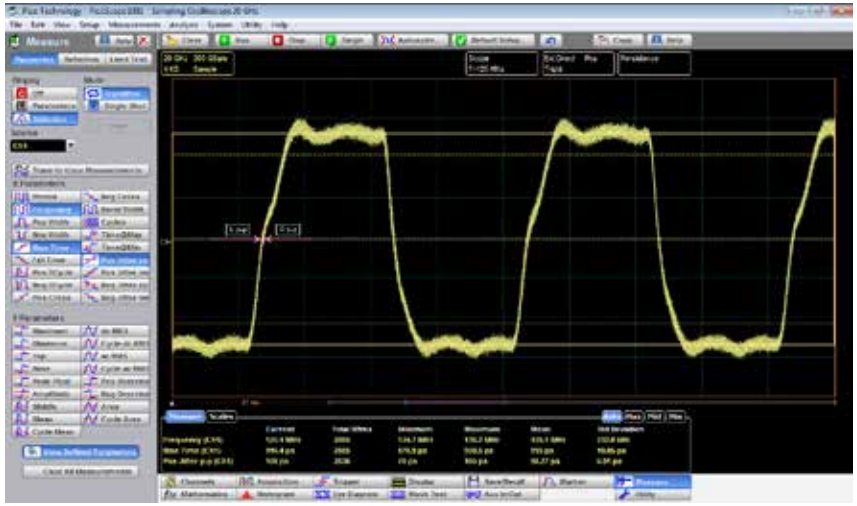


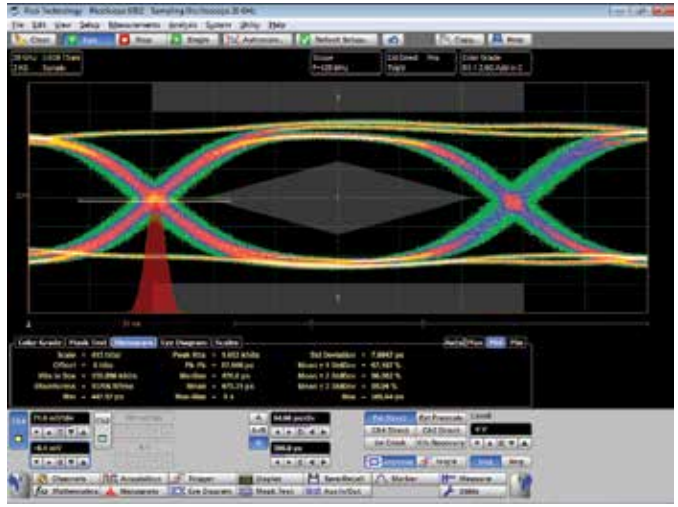


APPLICATIONS

Serial data pre-compliance testing
Telecom service and manufacturing
High-resolution timing and phase analysis
Digital system and transmission measurements
Automated pass/fail mask test
Fast pulse and logic characterization
Semiconductor characterization
TDR/TDT measurement
Eye diagram analysis with mask testing

PICOSCOPE 9000 SOFTWARE





CLOCK AND SIGNAL CHARACTERIZATION
Easily measure up to 20 GHz electrical or 9.5 GHz optical signal characteristics such as jitter, noise, rise time and overshoot in your circuits, connectors, cables and PCBs.

Use up to 4 simultaneous channel math functions on live waveforms, waveform memory or even other functions.

FFT analysis: View any signal in the frequency domain for analyzing crosstalk or distortions, identifying the source of noise and interference, and testing impulse responses of systems.

Quickly define parameters with over 50 built-in pulse measurements. Up to 10 standard or statistical measurements can be displayed simultaneously.

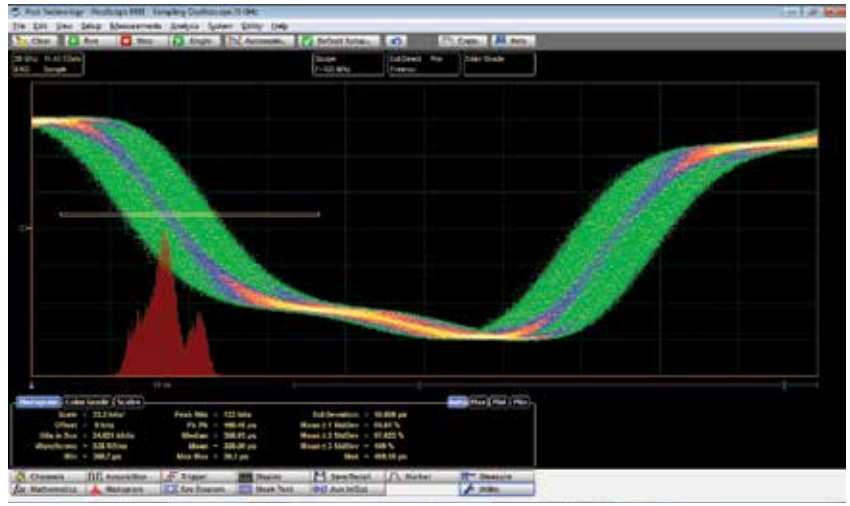
MASK TESTING
The PicoSample™ 3 software includes a comprehensive selection of standard masks and allows mask editing and margin adjustment. Data rates up to 11.3 Gb/s are supported.

The display can be grey-scaled or color-graded to aid in analyzing noise and jitter in eye diagrams. There is also a statistical display showing the number of failures in both the original mask and the margin.

Standard masks supplied: SONET/SDH, Ethernet, Fibre Channel, PCI Express, InfiniBand, XAUI, RapidIO, SATA, ITU G.703, ANSI T1.102, G.984.2.

Custom masks can be automatically generated and modified using the graphical editor. A specified margin can be added to any mask.

PICOSCOPE 9000 SOFTWARE



TDR/TDT

Time domain reflectometry/time domain transmission testing is used for measuring impedance and discontinuities, and determining their physical location along a transmission line.

The PicoScope 9311 and 9312 are supplied with a calibrated time-domain reflectometry (TDR) and time-domain transmission (TDT) accessory kit. This is used with the unit's built-in step generators (60 ps 6 V in PicoScope 9311) or extended pulse heads (40 ps 200 mV with PicoScope 9312).

Measure impedance and discontinuities in circuit boards, cables and transmission lines, connectors and IC packages, with a horizontal resolution of typically around 1.5 cm for a 40 ps edge. The results can be displayed as volts, ohms or reflection coefficient (rho) against time or distance.

HISTOGRAM ANALYSIS

The histogram is a probability distribution of the acquired data within a user-defined window or slice. This is a powerful signal analysis tool and such statistics form the basis of many of the automatic measurements that are provided.

Histograms can be constructed on waveforms on either the vertical or horizontal axes. The most common use for a vertical histogram is measuring and characterizing noise, while the most common use for a horizontal histogram is measuring and characterizing jitter.

PICOSCOPE 9200 SERIES

- **12 GHz BANDWIDTH ON 2 CHANNELS**
- **DUAL TIMEBASES DOWN TO 10 ps/DIV**
- **UP TO 10 GHz TRIGGER BANDWIDTH**
- **OPTICAL AND ELECTRICAL INPUTS**
- **ACTIVEX COMPONENT INCLUDED**

If you're looking for an affordable way to measure high-speed electrical signals, you can't do better than the PicoScope 9000 Series of PC Sampling Oscilloscopes.

Designed specifically for the complex task of analysing high-speed electrical signals, PicoScope 9000 Sampling Oscilloscopes are ideal for many advanced applications including: signal analysis, timing analysis, testing and design of high-speed digital communication systems, network analysis, semiconductor testing, and research and development.

Typical applications include:

- Electrical standards compliance testing
- Semiconductor characterization
- Telecom service and manufacturing
- Timing analysis
- Digital system design and characterization
- TDR/TDT measurement and analysis (PicoScope 9211A and 9231A only)
- Automatic pass/fail limit testing
- High-speed serial bus pulse response

ACCESSORIES

REFERENCE OPTICAL RECEIVER BESSEL-THOMSON FILTERS.
Terminated with 50 Ω SMA (m-f) connectors
All £80 $132 €97

TA120	51.8 Mb/s (OC1/STM0)
TA121	155 Mb/s (OC3/STM1)
TA122	622 Mb/s (OC12/STM4)
TA123	1.250 Gb/s (GBE)
TA124	2.488 Gb/s (OC48/STM16)

TA239 4 GHz Power Divider Kit £250 / $413 / €303:
Precision coax cable 30 cm
Precision coax cable 80 cm
4 GHz 50 Ω SMA(f-f-f) 3-resistor 6 dB power divider

TA237 14 GHz 25 ps TDR Kit £200 / $330 / €242
18 GHz, 50 Ω SMA(m-m) within series adapter
18 GHz, SMA(f) reference short
18 GHz, SMA(f) reference load

Attenuator SMA to SMA Bandwidth DC to 10 GHz
Attenuator 3 dB. TA181 £45 $75 €55
Attenuator 20 dB. TA173 £45 $75 €55

SPECIFICATIONS 9200 SERIES

VERTICAL	All Models
Channels	2
Bandwidth	DC to 12 GHz
Rise time	29.2 ps
Resolution	16 bits
RMS noise	<2.0 mV
Vertical gain accuracy	±2 %
Input range	±1 V
HORIZONTAL	**All Models**
Dual timebase	10 ps/div to 50 ms/div
Time interval accuracy	±0.2% ±15 ps
Resolution	200 fs minimum
Buffer size	Up to 4 kS/channel
TRIGGER	**All Models**
Direct trigger bandwidth	DC to 1 GHz
Prescaled trigger bandwidth	10 GHz
Trigger RMS jitter	<3.5 ps + 20 ppm of delay setting, typical
TDR/TDT	**9211A and 9231A**
Channels	2
Vertical scales	Volts, Rho (2 mrho/div to 2 rho/div), Ohm (1 ohm/div to 100 ohm/div)
Horizontal scale	Time or distance (Meter, Foot, Inch)
FUNCTION GENERATOR	**9211A and 9231A**
Modes	Step, Coarse timebase, Pulse, NRZ and RZ
Rise time	100 ps (typ) for Step (TDR)

MEASUREMENTS AND ANALYSIS	All Models
Markers	Horizontal and vertical bars or waveform markers (x and +)
Automatic measurements	Up to 40
FFT	Up to two FFTs simultaneously
OPTICAL - ELECTRICAL CONVERTER	**9221A and 9231A**
Unfiltered bandwidth	DC to 8 GHz typical
Effective wavelength range	750 nm to 1650 nm
Fiber input	Single-mode (SM) or multi-mode (MM)
Input return loss	SM: 24 dB, typical. MM: 16 dB, typical
UTILITY	Autoscale, automatic calibration, demo signals
GENERAL	Weight: 1 kg Size: 170 x 40 x 255 mm

	9201A	9211A	9221A	9231A
12 GHz sampling oscilloscope	•	•	•	•
USB port	•	•	•	•
LAN port		•		•
Clock recovery trigger		•	•	•
Pattern sync trigger		•	•	•
Dual signal generator outputs		•		•
Electrical TDR/TDT capability		•		•
8 GHz optical-electrical converter			•	•

Model	Order code	Price		
		GBP	USD	EUR
PicoScope 9201A	PP463	£5 995	$9 891	€7 253
PicoScope 9211A	PP473	£7 495	$12 366	€9 068
PicoScope 9221A	PP654	£12 495	$20 616	€15 118
PicoScope 9231A	PP664	£13 995	$23 091	€16 933

PICOSCOPE 9300 SERIES

- **20 GHz BANDWIDTH (17.5 ps RISE TIME)**
- **2 or 4 CHANNELS**
- **Up to 1 MS/s SAMPLE RATE INTO 32 kS BUFFER MEMORY**
- **15 TS/s EFFECTIVE SAMPLE RATE (64 fs RESOLUTION)**
- **14 GHz PRESCALED & 2.5 GHz DIRECT TRIGGER**
- **PATTERN TRIGGER OF LENGTH 7 TO 2^{23}-1**
- **JITTER <1.8 ps rms + 20 ppm DELAY**
- **16 bit, 60 dB DYNAMIC RANGE**

At 20 GHz bandwidth the PicoScope 9300 sampling oscilloscopes address digital and telecommunications applications of 10 Gb/s and higher, microwave applications up to 20 GHz and timing applications with a resolution down to 64 fs. Optional 11 Gb/s clock recovery, optical to electrical converter or differential, de-skewable Time Domain Reflectometry sources (40 or 60 ps) complete a formidable, small footprint and cost effective measurement package.

The PicoScope 9300 Series oscilloscopes use triggered sequential sampling to capture high-bandwidth repetitive or clock-derived signals without the expense or jitter of a very high-speed clocked sampling system such as a real-time oscilloscope. The 20 GHz bandwidth allows measurement of 17.5 ps transitions, while the very low sampling jitter enables a time resolution as short as 64 fs. The sequential sampling rate of up to 1 MS/s, unsurpassed by any other sampling oscilloscope, allows the fast building of waveforms, eye diagrams and histograms.

These units occupy very little space on your workbench and are small enough to carry with your laptop for on-site testing, but that's not all. Instead of using remote probe heads attached to a large bench-top unit, you can now position the scope right next to the device under test. Now all that lies between your scope and the DUT is a short, low-loss coaxial cable!

Everything you need is built into the oscilloscope, with no expensive hardware or software add-ons to worry about.

ACCESSORIES

PP897 14 GHz 25 ps TDR Kit £200 / $330 / €242
18 GHz, 50 Ω SMA(m-m) within series adapter
18 GHz, SMA(f) reference short
18 GHz, SMA(f) reference load

TA238 14 GHz Power Divider Kit £330 $545 €400
18 GHz 50 Ω SMA(f-f-f) 3-resistor 6 dB power divider
2x 30 cm precision coaxial SMA(m-m) cable

TA170 18 GHz 50 Ω SMA(m-f) connector saver adapter
£12 $20 €15

Attenuator SMA to SMA Bandwidth DC to 10 GHz
Attenuator 3 dB. TA181 £45 $75 €55
Attenuator 20 dB. TA173 £45 $75 €55

TA172 N (f)-SMA (m) inter-series adaptor £75 $124 €91

PASSIVE PROBE
Tip impedance 500 Ω || 2 pF. Cable length 1.3m
TA061 £199 $328 €241

REFERENCE OPTICAL RECEIVER BESSEL-THOMSON FILTERS.
Terminated with 50 Ω SMA (m-f) connectors
All £80 $132 €97

TA120	51.8 Mb/s (OC1/STM0)
TA121	155 Mb/s (OC3/STM1)
TA122	622 Mb/s (OC12/STM4)
TA123	1.250 Gb/s (GBE)
TA124	2.488 Gb/s (OC48/STM16)

SPECIFICATIONS 9300 SERIES

VERTICAL	All Models
Channels	2 (4 on 9341)
Bandwidth	DC to 20 GHz
Rise time	17.5 ps
Resolution	16 bits
RMS noise	1.5 mV typical
Vertical gain accuracy	±2 %
Input range	±1 V
HORIZONTAL	**All Models**
Dual timebase	5 ps/div to 3.2 ms/div
Time interval accuracy	±0.2% ±12 ps
Resolution	64 fs minimum
Buffer size	Up to 32 kS (shared)
TRIGGER	**All Models**
Direct trigger bandwidth	DC to 2.5 GHz
Prescaled trigger bandwidth	14 GHz
Trigger RMS jitter	<1.8 ps + 20 ppm of delay setting, typical
TDR/TDT	**9311 and 9312**
Channels	2
Vertical scales	Volts, Rho (10 mrho/div to 2 rho/div), Ohm (1 ohm/div to 100 ohm/div)
Horizontal scale	Time or distance (Meter, Foot, Inch)
Rise time	60 or 40 ps (typ) for Step (TDR)
FUNCTION GENERATOR	**All**
Modes	Step, Coarse timebase, Pulse, NRZ, RZ, Pulse, PRBS, 500 MHz clock and trigger out

MEASUREMENTS AND ANALYSIS	All Models
Markers	Horizontal and vertical bars or waveform markers
Automatic measurements	Up to 40
FFT	Up to two FFTs simultaneously
OPTICAL - ELECTRICAL CONVERTER	**9321**
Unfiltered bandwidth	DC to 9.5 GHz typical
Effective wavelength range	750 nm to 1650 nm
Fiber input	Single-mode (SM) or multi-mode (MM)
Input return loss	SM: 24 dB, typical. MM: 16 dB, typical
UTILITY	Autoscale, automatic calibration, demo signals
GENERAL	Weight: 1.2 kg Size: 170 x 40 x 260 mm

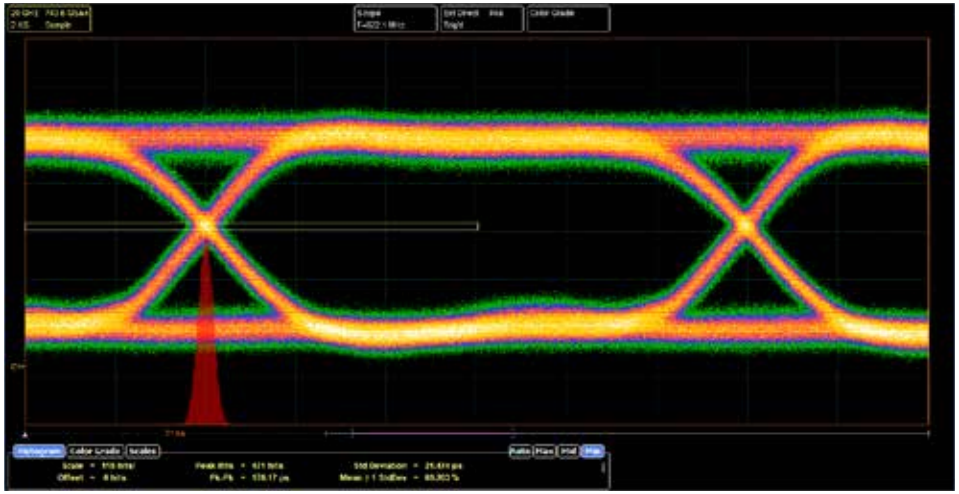
	9301	9302	9311	9312	9321	9341
20 GHz electrical inputs	2	2	2	2	2	4
Differential electrical TDR/TDT capability			60 ps	40 ps		
External TDR/TDT pulse heads				•		
9.5 GHz optical-electrical converter					•	
Clock recovery trigger		•			•	
Pattern sync trigger	•	•	•	•	•	•
Basic PRBS and clock generator	•	•	•	•	•	•
USB port & LAN port	•	•	•	•	•	•

Model	Order code	Price		
		GBP	USD	EUR
PicoScope 9301	PP890	£9 088	$14 995	€10 996
PicoScope 9302	PP891	£11 512	$18 995	€13 930
PicoScope 9311	PP892	£11 512	$18 995	€13 930
PicoScope 9312	PP893	£13 573	$22 395	€16 423
PicoScope 9321	PP894	£17 876	$29 495	€21 630
PicoScope 9341	PP895	£13 573	$23 395	€16 423

9.5 GHZ OPTICAL MODEL

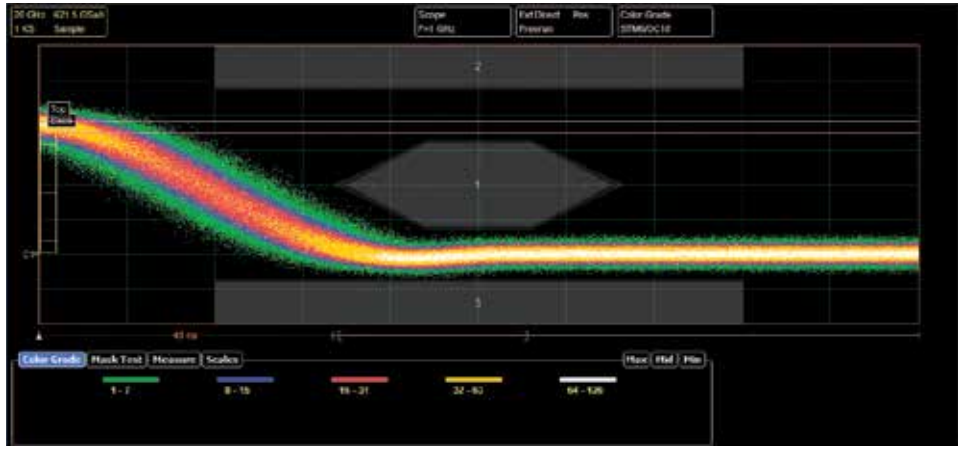
The PicoScope 9321 includes a built-in, precision optical-to-electrical converter. With the converter output routed to one of the scope inputs (optionally through an SMA pulse shaping filter), the PicoScope 9321 can analyze standard optical communications signals such as OC48/STM16, 4.250 Gb/s Fibre Channel and 2xGB Ethernet. The scope can perform eye pattern measurements with automatic measurement of optical parameters including extinction ratio, S/N ratio, eye height and eye width. With its integrated clock recovery module, the scope is usable to 11.3 Gb/s.

The converter input accepts both single-mode (SM) and multi-mode (MM) fibers and has a wavelength range of 750 to 1650 nm



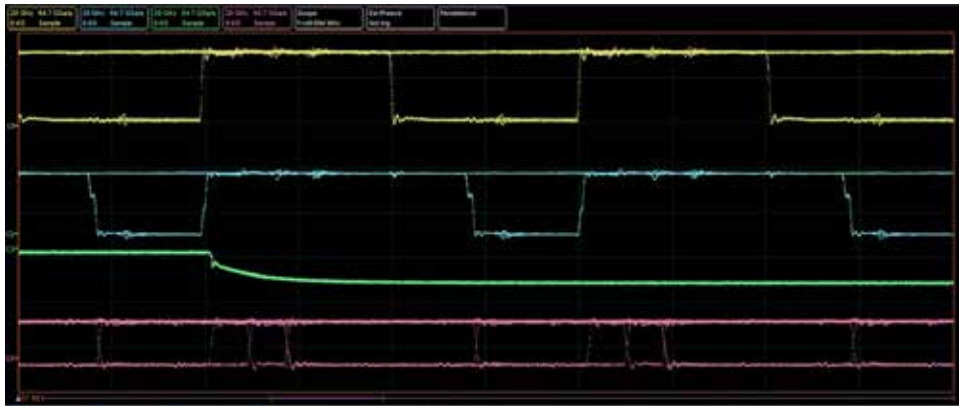
PATTERN SYNC TRIGGER AND EYE LINE MODE

The pattern sync trigger, derived from bit rate, pattern length, and trigger divide ratio can build up an eye pattern from any specified group of bits in a sequence.



4 CHANNEL MODEL

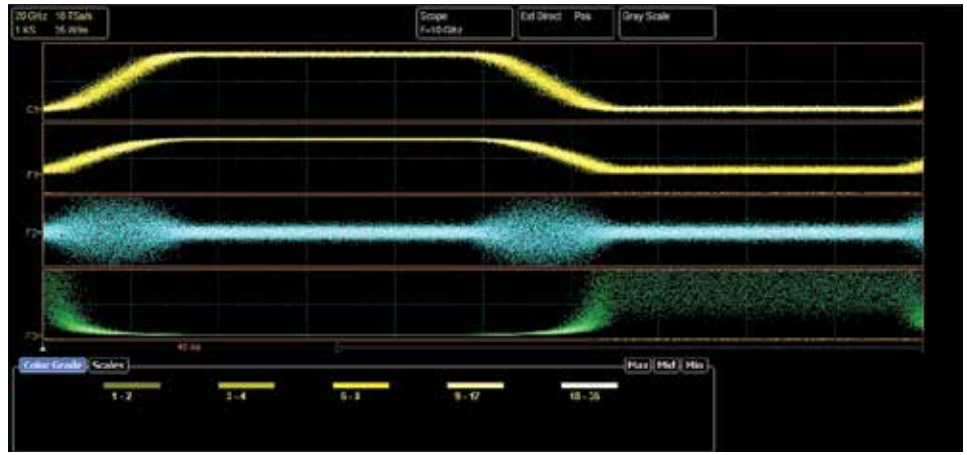
The PicoScope 9341 has two 2-channel samplers, with adjustable deskewing between samplers as well as between signal pairs. This 4-channel model includes all the features of the PicoScope 9301 2-channel sampling scope and is packaged in the same compact enclosure.



POWERFUL MATHEMATICAL ANALYSIS

The PicoScope 9300 Series scopes support up to four simultaneous mathematical combinations and functional transformations of acquired waveforms.

You can select any of the mathematical functions to operate on either one or two sources. All functions can operate on live waveforms, waveform memories or even other functions. There is an equation editor for creating custom functions.



Oscilloscope Accessories

PASSIVE PROBES

Our range of oscilloscope accessories have been carefully chosen for use with PicoScope oscilloscopes

MI007 SCOPE PROBE 60 MHz
This high-quality general-purpose oscilloscope probe has a 60 MHz bandwidth. A two-position slide switch selects attenuation of either x1 or x10.

TA132 SCOPE PROBE 150 MHz
TA131 SCOPE PROBE 250 MHz
These high-quality general-purpose oscilloscope probes have a 150 MHz or 250 MHz bandwidth. A two-position slide switch selects attenuation of either x1 or x10.

TA150 & TA133 SCOPE PROBE 350 & 500 MHz
These high-quality general-purpose oscilloscope probes have 350 MHz and 500 MHz bandwidths. Each probe is supplied with a range of accessories for convenient, accurate measurements. Fixed x10 attenuation.

TA061 & TA062 SCOPE PROBE 1.5 GHz
These very high-bandwidth 1.5 GHz low impedance probes are suitable for use with high-speed oscilloscopes and spectrum analyzers. Available with either an SMA or a BNC connector.

Our passive oscilloscope probes are available in bandwidths from 60 MHz up to 1.5 GHz. The table below shows their characteristics:

SPECIFICATION	MI007		TA132		TA131		TA150	TA133	TA061	TA062
Attenuation	1:1	10:1	1:1	10:1	1:1	10:1	10:1	10:1	10:1	10:1
Bandwidth	DC to 15 MHz	DC to 60 MHz	DC to 10 MHz	DC to 150 MHz	DC to 10 MHz	DC to 250 MHz	DC to 350 MHz	DC to 500 MHz	DC to 1.5 GHz	DC to 1.5 GHz
Rise time	23.3 ns	5.8 ns	35 ns	2.33 ns	35 ns	1.4 ns	1 ns	700 ps	240 ps	240 ps
Input resistance	1 MΩ	10 MΩ	1 MΩ	10 MΩ	1 MΩ	10 MΩ	10 MΩ	10 MΩ	500 Ω	500 Ω
Input capacitance	46 pF	15 pF	57 pF	15 pF	57 pF	15 pF	9.5 pF	9.5 pF	2 pF	2 pF
Working voltage	600 V PK CAT II		600 V PK CAT II		600 V PK CAT II		300 V RMS CAT II	300 V RMS CAT II	12 V PK	12 V PK
Connector	BNC		BNC		BNC		BNC	BNC	SMA	BNC
Price	£15 $25 €18		£20 $33 €24		£25 $41 €30		£125 $206 €151	£150 $248 €182	£199 $328 €240	£199 $328 €240
Included in the kit with PicoScopes:	2204A 2205A 2206A 2205 MSO 3203D 3203D MSO 3403D 3403D MSO 4224 4424 4262 5242A/B 5442A/B		2207A 3205D 3405D 3204D 3204D MSO 3205D MSO 3404D 3404D MSO 3405D MSO 5243A/B 5243A/B 5443A/B		2208A 3206D 3406D 3206D MSO 3406D MSO 5244A/B 5444A/B		6402C/D 6403C/D	6404C/D		
Recomended for use with PicoScopes:	2204 2205								9200 Series 9300 Series 6407	6402C/D 6403C/D 6404C/D

ACTIVE PROBES

SPECIFICATION	TA042	TA043	TA044
Description	100 MHz 1400 V differential probe	100 MHz 700 V differential probe	70 MHz 7000 V differential probe
Attenuation	100:1, 1000:1	10:1, 100:1	100:1, 1000:1
Bandwidth	100 MHz	100 MHz	70 MHz
Rise Time	3.5 ns	3.5 ns	5 ns
Differential voltage ranges	140 V DC + peak AC 100 V RMS	70 V DC + peak AC 70 V RMS	700 V DC + peak AC 500 V RMS
	1400 V DC + peak AC 1000 V RMS	700 V DC + peak AC 500 V RMS	7000 V DC + peak AC 5000 V RMS
Common mode range	1400 V DC + peak AC 1000 V RMS	700 V DC + peak AC 500 V RMS	7000 V DC + peak AC 2500 V RMS
Input impedance	4 MΩ/7 pF each side to ground	4 MΩ/7 pF each side to ground	10 MΩ/10 pF each side to ground
Power requirements	4 x AA cells (supplied)	4 x AA cells (supplied)	4 x AA cells (supplied)
Safety rating	CAT III	CAT III	CAT I
Price	£376 $620 €455	£454 $749 €549	£537 $886 €650

ACTIVE DIFFERENTIAL PROBE 700 TO 7000 V, 70 TO 100 MHz

The TA042, TA043 and TA044 are active differential oscilloscope probes. They let you use a conventional earthed oscilloscope to measure signals that are not referenced to ground, including mains voltages with the TA042 and TA043. They can also be used to measure and observe the waveforms of three-phase supplies or the gate and control signals of semiconductor circuits. They are ideal for investigating motor speed controls, uninterruptible power supplies, switch mode power supplies and process controllers.

SPECIFICATION	TA045
Attenuation	10:1
Bandwidth	200 MHz
Common mode	±60 V
Differential	±20 V
Input impedance	500 kΩ / 7 pF
Battery power	Optional (TA047)
Safety rating	CAT I
Price	£644 $1063 €779

ACTIVE DIFFERENTIAL PROBE 20 V, 200 MHz

The TA045 is a CAT I rated differential oscilloscope probe that can measure up to ±20 volts.

SPECIFICATION	TA046
Attenuation	10:1
Bandwidth	800 MHz
Common mode	±30 V
Differential	±15 V
Input impedance	100 kΩ / 2 pF
Price	£800 $1320 €968

ACTIVE DIFFERENTIAL PROBE 15 V, 800 MHz, x 10

The TA046 is a high-bandwidth differential probe. It is ideal for measuring high-speed differential signals.

TETRIS 1000, 1500 AND 2500 WIDE BANDWIDTH SINGLE ENDED ACTIVE PROBES

SPECIFICATION	TETRIS 1000/TA112	TETRIS 1500/TA222	TETRIS 2500/TA223
Connector	BNC	BNC (with SMA adaptor)	SMA (with BNC adaptor)
Attenuation	10:1		
Bandwidth (-3 dB)	1 GHz	1.5 GHz	2.5 GHz
Input impedance	1 MΩ / 0.9 pF		
Dynamic range	± 8 V		
Working voltage	20 V		
Cable length	1.3 m		
Price	£595 $982 €720	£657 $1085 €795	£1219 $2012 €1475

The TETRIS active probes can contact adjacent square pins in 2.54 mm (0.1") pitch simultaneously. The probe's housing is T-shaped so that many probes can be attached side by side.

ACTIVE DIFFERENTIAL PROBE 70 V, 50 MHz, x10, CAT I

SPECIFICATION	TA058
Attenuation	10:1
Bandwidth	50 MHz
Common mode	±700 V or 600 V RMS
Differential	±70 V or 70 V RMS
Battery power	Optional (TA047)
Input impedance	1.6 MΩ / 7 pF
Safety rating	CAT I
Price	£280 $462 €339

The TA058 is a CAT I rated differential oscilloscope probe that can measure up to ±70 volts.

ACTIVE DIFFERENTIAL PROBE 700 V OR 1400 V CAT III

SPECIFICATION	TA041	TA057
Attenuation ranges	10:1, 100:1	20:1, 200:1
Bandwidth	DC to 25 MHz (-3 dB)	DC to 25 MHz (-3 dB)
Differential voltage ranges	±70 V or 70 V RMS ±700 V or 700 V RMS	±140 V or 1000 V RMS ±1400 V or 1000 V RMS
Common mode voltage range	±700 V or 700 V RMS	±1400 V or 1000 V RMS
Input impedance	4 MΩ / 5.5 pF	4 MΩ / 5.5 pF
Safety rating	CAT III	CAT III
Price	£227 $375 €275	£239 $394 €289

The probe permits a conventional earthed oscilloscope to measure signals that are not referenced to earth, enabling mains voltages to be tested. Ideal for investigation of motor speed controls, uninterruptible power supplies, switch mode power supplies and process controllers.

ACCESSORIES FOR ACTIVE PROBES

The TA047 is an optional 4AA battery pack for the TA045 and TA058 active differential probes. We also offer power supplies should you need to buy a new one. The PS008 is a 9 V power supply for all differential probes except TA046. The PS009 is a 15 V power supply for the TA046 only.

TA047
Price £39 $64 €47

PS008 & PS009
Price £15 $25 €18

CABLES AND CONNECTORS

BNC TO 4 mm CABLE (3 m)
A wide range of probes and clips can be plugged into the 4 mm connectors at the end of the cable. TA000
£20 $33 €24

BNC TO 4 mm CABLE (1.8 m)
Test lead - BNC plug to 4 mm plugs.
MI029
£10 $16 €12

BNC TO BNC CABLE (1.2 m)
Test lead - BNC plug to BNC plugs.
MI030
£8 $13 €10

BNC TO CROCODILE CLIPS CABLE (1.8 m)
Test lead - BNC plug to crocodile clips
MI031
£5 $8 €6

BNC TO 4 mm ADAPTER
The BNC to 4 mm adapter converts two 4 mm (“banana”) plugs to a BNC plug.
MI078
£12 $20 €15

DATA CABLES
We also offer a range of data cables. All cables are 1.8 m in length.

USB 2.0 CABLE A-B 1.8m	MI106 £5 $8 €6
Double headed USB 2.0 CABLE	TA146 £6 $10 €7
1.8m USB 3.0 CABLE	TA155 £7.50 $12.50 €9

(High-quality cable made especially for PicoScopes)

GENERAL ACCESSORIES

ATTENUATOR SET: BNC 50 Ω, 1 W, 1 GHz, 3, 6, 10 AND 20 dB

The TA050 attenuator set consists of four coaxial attenuators designed for use with signals up to 1 GHz. Each attenuator has a male and a female BNC connector.

SPECIFICATION	TA050
Attenuation	3, 6, 10, 20 dB
Bandwidth	DC to 1 GHz
Max. power dissipation	1 W
Input impedance	50 Ω
Output impedance	50 Ω
VSWR	1.5:1 or better
Dimensions	56 x 20 x 17 mm
Connectors	BNC, 1 male + 1 female
Price	£39 $64 €47

FEED-THROUGH TERMINATOR

SPECIFICATION	TA051
Bandwidth	DC to 1 GHz
Max. power dissipation	1 W
Input impedance	50 Ω
Dimensions	56 x 20 x 17 mm
Connectors	BNC, 1 male + 1 female
Price	£10 $16 €12

The TA051 feed-through terminator is a coaxial terminator with BNC connectors. It is useful for connecting signals from 50 ohm sources into instruments with high-impedance inputs, such as oscilloscopes.

CURRENT PROBES 30A TO 2000A AC/DC

Current clamps offer a safe, cost-effective, simple and accurate way to take current measurements. They enable you to measure currents without breaking the electric circuit. Current clamps are designed with jaws that can be opened, placed around the conductor and clamped closed to form a magnetic loop around the conductor.

The Pico range of current clamps can be used with Pico oscilloscopes and data loggers, as well all major brands of oscilloscopes and multimeters.

SPECIFICATION	30 A	60 A	600 A	2000 A / 200 A
Range	1 mA to 30 A	10 mA to 60 A	0 to 600 A	0 to 2000 A
Frequency range	DC to 100 kHz	DC to 20 kHz	DC to 400 Hz	DC to 20 kHz
Max. conductor size	25 mm	9 mm	30 mm	32 mm
Operational temp. and humidity	0°C to 50°C, 70% RH	0°C to 50°C, 70% RH	0°C to 50°C, 70% RH	0°C to 50°C
	TA189 BNC	TA018 BNC	TA019 BNC	TA167 BNC
Price	£279 $460 €338	£99 $163 €119	£99 $163 €119	£155 $256 €188
		TA009 4 mm	MI077 4 mm	
Price		£80 $132 €97	£80 $132 €97	

PicoLog®

DATA LOGGERS

Data logging products from Pico Technology provide a straightforward answer to your data logging requirements.

WHAT IS A DATA LOGGER?
A data logger is an electronic device that is used to record measurements over time. Pico Technology data loggers require no external power supply and simply plug into a Ethernet or USB port on your PC.

WHAT CAN I MEASURE?
By connecting suitable sensors, Pico Technology data acquisition products can be used to measure temperature, pressure, relative humidity, light, resistance, current, power, speed, vibration... in fact, any physical parameter.

WHAT SOFTWARE DO I NEED?
Pico Technology data loggers are supplied complete with PicoLog software. This powerful but flexible data acquisition software allows you to collect, analyze and display data. With PicoLog the data is viewable both during and after data collection, in both spreadsheet and graphical format. You can also export the data for use in other applications.

PICO DATA LOGGER RANGE
Along with voltage-input data loggers, the Pico Technology data logger range also includes loggers designed for specific applications:

- For measuring temperature, loggers such as the TC-08 thermocouple data logger and PT-104 temperature data logger offer an accurate solution.
- Current monitoring can be carried out by our PicoLog CM3 3 channel current data logger which is suitable for single or three phase alternating current.
- pH can be measured using the DrDAQ pH Kit. This kit allows you to measure the full pH scale with automated temperature compensation.

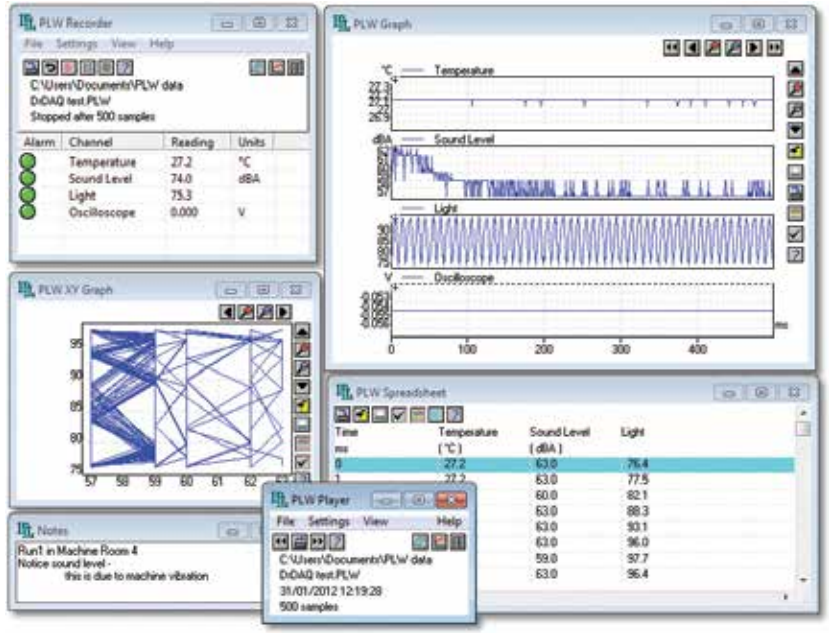
Whatever your data logging requirements, a Pico Technology data logger gives you an easy-to-use and accurate solution at a competitive price.

PICOLOG SOFTWARE

PicoLog is a powerful and flexible program for collecting, analyzing and displaying data. PicoLog can be used with all data acquisition and data logging products.

Some of the features of PicoLog are listed here. To see for yourself just how good it is, download your free demo copy.

- Collects up to 1 million samples
- Easy and intuitive to use
- Free upgrades and technical support
- Supports 32- and 64-bit editions of Windows XP (SP3 and above), Windows Vista and Windows 7 and Windows 8 (Not Windows RT)
- International language versions (French, Italian, German, Spanish, Czech and Swedish)
- Easy to set up and use, with online help
- Real-time data collection, analysis and display
- Programmable alarm limits can be set for each channel
- Data can be exported to spreadsheets and databases
- Save multiple setups for different tests and experiments
- Can be used with desktop or laptop PCs
- Supports multiple loggers on the same PC
- Uses PC monitor to give large colour display, ideal for education and training
- Waveforms can be saved, printed, faxed or e-mailed from your PC
- Scaling, filtering
- IP networking



PROGRAM MODES

PicoLog for Windows works in two modes: player mode for displaying previously recorded data, and recorder mode for recording new data. You can have more than one copy of PicoLog running at once, so you can use the player to analyze old data while recording new data.

PicoLog can collect data from up to 20 converters at the same time. This not only allows a mix of voltage input units to be used on the same PC, but also allows other PC-based instruments such as the TC-08 thermocouple data logger to be used at the same time.

EXPORTING DATA

Data can easily be transferred (either as graphs or raw data) to other Windows applications by using the clipboard (copy and paste). Graphs can also be saved to disk as bitmaps, and data from the spreadsheet can be saved in text format. Current readings can be transferred using Dynamic Data Exchange (DDE).

PICOLOG SOFTWARE

MULTIPLE VIEWS
PicoLog displays data in a number of views, which can be activated as and when required, both during and after data collection.

RECORDER VIEW
Enables you to start and stop recording and specify recording files. It shows the current readings and alarm conditions for each channel. All settings such as scaling, channels and sampling are controlled from the recorder view.

XY GRAPH VIEW
Displays one parameter against another. Useful for plotting voltage against current, for example.

SPREADSHEET VIEW
Displays text data in a format that can be easily copied and pasted into other applications. Data can also be saved to disk in standard text format.

GRAPH VIEW
Graphs can be displayed both during and after data collection. Each channel can be displayed in its own graph, or multiple channels can be displayed in the same graph. Axes can be set up manually, automatically or in chart recorder mode. Multipliers allow you to magnify areas of interest. Graphs can be copied into the clipboard and then pasted into reports.

NOTES VIEW
Notes view allows you to attach notes to data.

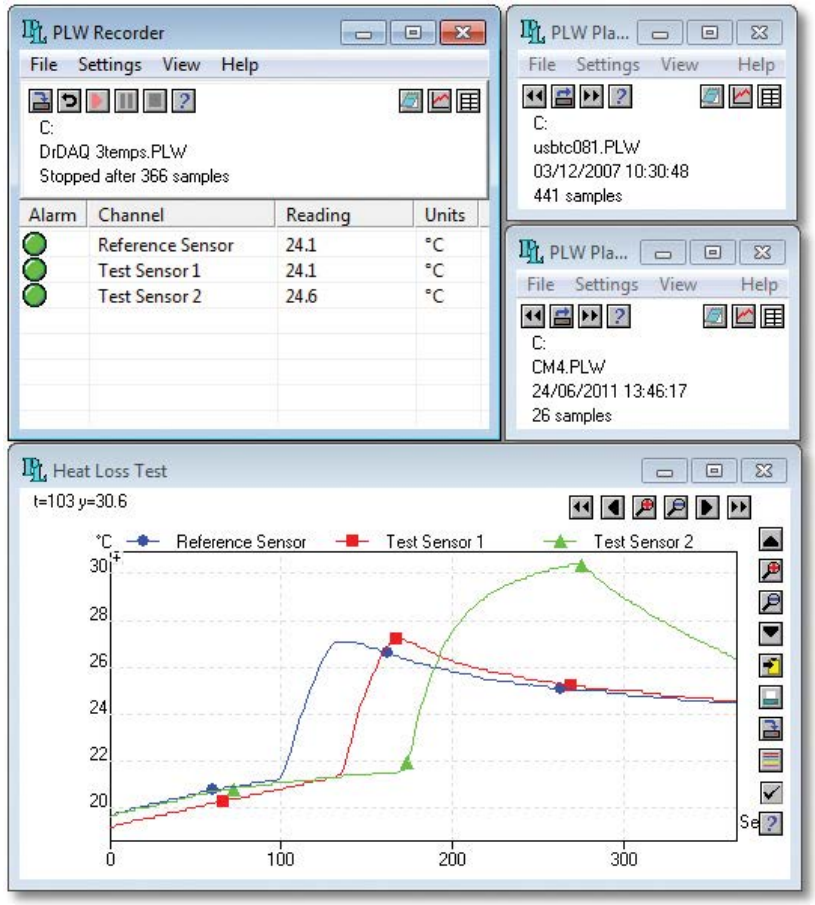
PLAYER VIEW
Displays previously recorded data. It enables you to scroll quickly through stored files to compare results on successive runs. The player can be used to examine old data while new data is still being recorded.

PARAMETER SCALING
Can be used to convert raw data into standard engineering units. A wide range of equation and table lookup scaling options are provided.

ADDITIONAL PARAMETERS
For example, to calculate power output from a boiler, you can multiply a flow reading from one channel by the temperature difference between two further channels.

ALARM LIMITS
Can be set for each channel to alert the user should a parameter go out of a specified range.

IP NETWORKING
PicoLog data acquisition software supports IP networking. This enables remote data collection from Pico Technology's full range of data acquisition products.



PICOLOG CM3

CURRENT DATA LOGGER

- **3 CHANNEL CURRENT DATA LOGGER**
- **SUITABLE FOR SINGLE OR THREE PHASE ALTERNATING CURRENTS**
- **LOW CONVERSION TIME**
- **HIGH RESOLUTION AND ACCURACY**

The new PicoLog CM3 USB/Ethernet Current Data Logger is a compact, easy-to-use instrument for measuring the current consumption of buildings and machinery. With three channels, high accuracy and low noise, it is ideal for recording data from both single-phase and three-phase AC supplies. The logger is supplied complete with three AC current clamps and all necessary software. The USB and Ethernet interfaces allow the logger to be used as a USB-only device, as a USB-powered device with Ethernet interface, or as a Power-over-Ethernet (PoE) device. Using the Ethernet interface, the PicoLog CM3 can be located anywhere on a LAN or on the internet.

DATA COLLECTION

PicoLog is a powerful but flexible data acquisition program designed for collecting, analyzing and displaying data over long or short periods of time. Data can be viewed both during and after data collection in spreadsheet or graphical format. If required, the data can also be easily exported to other applications.

PicoLog	CM3
Channels	3
Range (voltage input)	0 to 1 V AC RMS
Accuracy (voltage input)	±1 % (to 200 mV), ±2.5 % (to 1 V)
Range (current clamp)	0.1 to 200 A AC RMS
Accuracy (current clamp)	±2 %, ±0.5 A
Resolution	24 bit ADC
Reading rate	<1 second per conversion
Input connectors	4 mm socket
PC connection	USB or Ethernet
Dimensions	184 x 135 x 36 mm
Part number - Logger only	PP815
Price	£249 $410 €301
Part number - Kit with 3 current clamps	PP803
Price	£349 $575 €422

VOLTAGE DATA LOGGERS

PICOLOG 1000 SERIES

- **UP TO 16 UNIPOLAR ANALOG INPUT CHANNELS**
- **UP TO 12-BIT RESOLUTION WITH 0.5% ACCURACY**
- **UP TO 4 SOFTWARE-CONFIGURABLE DIGITAL OUTPUT LINES**
- **UP TO 1 MS/s SAMPLING RATE**

A DISTINGUISHED PEDIGREE

The PicoLog 1000 Series is the result of a distinguished lineage that goes back to the release of our first multi-channel data logger — the ADC-11 — in 1993. The original ADC-11, and its successor the USB ADC-11, proved to be the perfect choice for users wanting a low-cost way to measure and record multiple signals. The PicoLog 1000 Series builds on this success to give you the same low-cost data acquisition but with greater power and performance. (Because the ADC-11 was so popular we've also added a USB ADC-11 compatibility mode, which allows you to use your PicoLog 1000 logger as a direct replacement for the USB ADC-11.)

AN EXPANDABLE DATA ACQUISITION SYSTEM

The budget PicoLog 1012 model has 12 input channels. The more powerful PicoLog 1216 has 16. Need more channels? No problem. Using PicoLog you can connect up to 20 Pico data loggers to one PC — giving you a potential 250 channel PicoLog 1000 Series data acquisition system, or the ability to use your PicoLog 1000 logger with other devices such as the USB TC-08 thermocouple data logger.

PICOLOG 1000 TERMINAL BOARD
This optional terminal board with screw terminals lets you easily and quickly connect your sensors to the logger. The board also has solder pads on which you can fit resistors to widen the measuring range for each input.
Terminal board PP545 £15 $25 €18

PicoLog	1012	1216
Channels	12	16
Resolution	10 bits	12 bits
Input ranges	0 to 2.5 V	0 to 2.5 V
Part number - with terminal board	PP546	PP547
Price	£105 $173 €127	£159 $262 €192

VOLTAGE DATA LOGGERS

ADC-20 AND ADC-24

- **UP TO 8 TRUE DIFFERENTIAL OR 16 SINGLE-ENDED INPUTS**
- **24-BIT RESOLUTION**
- **ACCURATE TO WITHIN 0.1%**
- **FAST CONVERSION TIME**

ADC-20 AND ADC-24 TERMINAL BOARD
This optional terminal board provides screw terminals to allow you to quickly connect and disconnect different sensors.
Terminal board PP310 £25 $42 €30

THE ULTIMATE IN RESOLUTION AND ACCURACY
With up to 24 bit resolution, the ADC-20 and ADC-24 USB data loggers are able to detect the smallest signal changes. Features such as true differential inputs, galvanic isolation and software selectable sampling rates all contribute to a superior noise-free resolution, and ensure that your measurements are reliable and accurate to within 0.1%.

FLEXIBLE MULTI-CHANNEL ACQUISITION
Both the ADC-20 and ADC-24 feature true differential inputs for excellent noise rejection. Each differential input can also be configured as 2 single-ended inputs. With up to 8 differential or 16 single-ended inputs on the ADC-24, this flexibility gives you complete control over the type of inputs you use. For example, you may configure the ADC-24 to use 4 differential and 8 single-ended inputs, or 2 differential and 12 single-ended inputs; and so on: the choice is yours.

With up to 7 bipolar voltage ranges, the ADC-20 and ADC-24 are also versatile enough to be used with a wide range of sensors and signal types.

Model	ADC-20	ADC-24
Channels	4 diff/8 single-ended	8 diff/16 single-ended
Resolution	20 bits	24 bits
Voltage ranges	±2500 mV ±1250 mV	±2500 mV, ±1250 mV ±625 mV, ±312 mV ±156 mV, ±78 mV ±39 mV
Part number - Logger only	PP308	PP309
Price	£199 $328 €240	£399 $658 €482
Part number - with terminal board	PP311	PP312
Price	£219 $361 €264	£419 $691 €506

TEMPERATURE DATA LOGGERS

TC-08

- **8 CHANNEL THERMOCOUPLE DATA LOGGER**
- **MEASURES FROM -270°C TO +1820°C**
- **AUTOMATIC COLD JUNCTION COMPENSATION**
- **HIGH RESOLUTION AND ACCURACY**

WIDE TEMPERATURE RANGE
The TC-08 thermocouple data logger is designed to measure a wide range of temperatures using any thermocouple that has a miniature thermocouple connector. Additionally, the TC-08 can measure other sensors using a 70 mV range.

Featuring built-in cold junction compensation (CJC), the TC-08 has an effective temperature range of -270°C to +1820°C. (The actual temperature range depends on the thermocouple being used.)

ALL THE BENEFITS OF USB
The TC-08 connects to the USB port of a Windows-based PC and enables the host PC to automatically detect the TC-08, avoiding the need for any complex setup procedures. The USB connection also allows the TC-08 to be powered directly by the USB port, eliminating the need for an external power supply and making the TC-08 ideal for measuring temperatures both in the lab and in the field.

TC-08 TERMINAL BOARD
This is an optional terminal board for the TC-08. The screw terminals allow wires to be attached to the data logger without soldering and enable the TC-08 to measure voltages from 0 to +5 V, or 4-20 mA loop current.
Terminal board PP624 £18 $30 €22

Model	TC-08
Channels	8
Resolution	20 bits
Voltage input range	±70 mV
Conversion time	100 ms
Temperature accuracy	Sum of ±0.2 % of reading and ±0.5°C
Voltage accuracy	Sum of ±0.2 % of reading and ±10 µV
Power	PC connection - USB
Thermocouple types supported	B, E, J, K, N, R, S, T
Part number	PP222
Price	£249 $410 €301

THERMOCOUPLES

Pico Technology offers a range of popular type K thermocouples for use with the TC-08 thermocouple data logger and other suitable temperature measuring devices.

Please contact our technical support team if you require any further information on thermocouples that are suitable for your application.

TYPE K THERMOCOUPLES

	(EXPOSED WIRE, FIBERGLASS INSULATED)			(EXPOSED WIRE, PTFE INSULATED)				AIR PROBE	INSERTION PROBE	RIBBON SURFACE PROBE
	SE001	SE030	SE031	SE000	SE027	SE028	SE029	SE002	SE003	SE004
Tip diameter	1.5 mm			1.5 mm				4.5 mm	3.3 mm	8 mm
Tip temperature	-60 to +350°C			-75 to +250°C				-50 to +250°C	-50 to +250°C	-10 to +250°C
Probe length	NA			NA				120 mm	120 mm	120 mm
Cable length	1 m	2 m	5 m	1 m	2 m	3 m	10 m	1 m	1 m	1 m
Price	£6 $10 €7	£8 $12 €10	£12 $20 €15	£6 $10 €7	£8 $13 €10	£9 $15 €11	£18 $30 €22	£30 $50 €36	£24 $40 €29	£28 $46 €34

TEMPERATURE DATA LOGGERS

PT-104 PRT DATA LOGGER

- **MEASURES TEMPERATURE, RESISTANCE AND VOLTAGE**
- **HIGH RESOLUTION AND ACCURACY**
- **CONNECT VIA USB OR ETHERNET PORT**

ACCURACY AND RESOLUTION

Although accurate temperature sensors are widely available, it has been difficult to find a measuring device that can take advantage of them without introducing excessive errors. The PT-104, however, is inherently accurate due to its novel design. Rather than relying on voltage references (which tend to be temperature-sensitive) it uses 'reference' resistors which are extremely stable (low temperature coefficient and drift). The exact value of each resistor is stored in an EEPROM to provide the ultimate in accuracy (annual recalibration is recommended). To achieve the 0.001°C resolution, a highly advanced ADC is used that can resolve to better than 1 part in 16 million.

TEMPERATURE

The PT-104 measures temperature using platinum resistance thermometers (PRTs). Both common industry standards (PT100 and PT1000) are supported. The unit is compatible with 2, 3 and 4 wire sensors (4 wire PT100 sensors are recommended for accurate measurements). A wide range of PT100 sensors are available for use with the PT-104.

PT-104 SCREW TERMINAL ADAPTER

The PT-104 Screw Terminal Adapter allows PT100 probes that are not fitted with a mini-DIN connector to be used with the data logger without the need for soldering. Terminal adaptor PP660 £6 $10 €7

SPECIFICATION	Temperature	Resistance	Voltage
Sensor	PT100, PT1000	N/A	N/A
Range	-200 to 800°C	0 to 375 Ω 0 to 10 kΩ	0 to 115 mV 0 to 2.5 V
Accuracy (Unit@23±2°C)	0.015°C + 0.01% of reading	20 ppm @ 100 Ω	0.4%
Temperature coefficient		5 ppm/°C	100 ppm/°C
Resolution	0.001°C	1 µΩ	0.156 µV
Number of channels	4		
Part number	PP682		
Price	£399 $658 €509		

PT100 TEMPERATURE SENSORS

GENERAL-PURPOSE LOW-COST PT100 PROBES

PT100 CLASS A SENSOR/SE011

PT100 GENERAL PURPOSE/SE019

SPECIFICATION	SE011	SE019
Temperature range	-30 to +350°C	-75 to +260°C
Accuracy	±0.15°C @ 0°C	±0.15°C @ 0°C
Dimensions	Length 200 mm Diameter 6 mm	Length 120 mm Diameter 3 mm
Cable	1 m	
Material	Stainless steel probe, PVC cable	
Handle	No	Yes
Price	£23 $38 €28	£21 $35 €25

IMMERSION PT100 PROBES

PT100 1/10 DIN SENSOR/SE012

PT100 IMMERSION PROBE/SE014

SPECIFICATION	SE012	SE014
Temperature range	-50 to +250°C	-75 to +250°C
Accuracy	±0.03°C @ 0°C	±0.15°C @ 0°C
Dimensions	Length 200 mm Diameter 4 mm	Length 120 mm Diameter 3.3 mm
Cable	1 m	
Material	Stainless steel probe, PTFE cable	Stainless steel probe, PVC cable
Handle	No	Yes
Price	£48 $79 €58	£46 $76 €56

INSERTION PT100 PROBES

PT100 INSERTION PROBE/SE015

PT100 INSERTION PROBE HEAVY DUTY/SE016

SPECIFICATION	SE015	SE016
Temperature range	-75 to +250°C	-60 to +500 °C
Accuracy	±0.15°C @ 0°C	±0.3 °C @ 0 °C
Dimensions	Length 120 mm Diameter 3.3 mm	Length 150 mm Diameter 4 mm
Cable	1 m	
Material	Stainless steel probe, PVC cable	
Handle	Yes	
Price	£48 $79 €58	£50 $83 €61

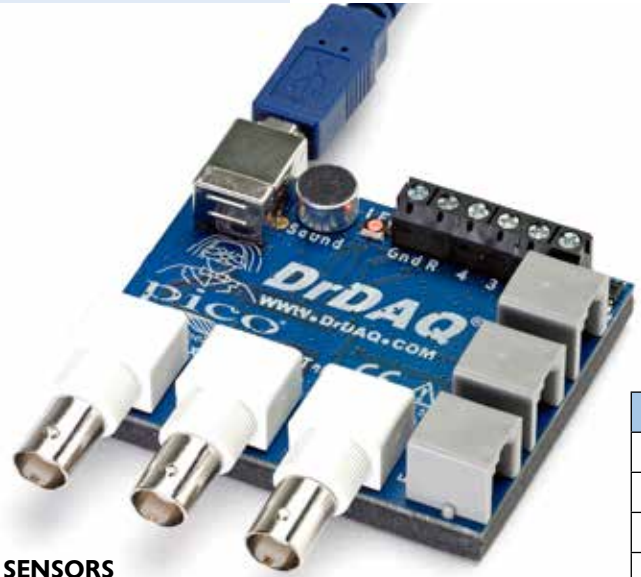
AIR PT100 PROBES

PT100 AIR PROBE FAST/SE017

PT100 AIR PROBE HIGH/SE018

SPECIFICATION	SE017	SE018
Temperature range	-75 to +250°C	-60 to +500 °C
Accuracy	±0.15°C @ 0°C	±0.3 °C @ 0 °C
Dimensions	Length 120 mm Diameter 3.3 mm	Length 150 mm Diameter 4 mm
Cable	1 m	
Material	Stainless steel probe, PVC cable	
Handle	Yes	
Price	£46 $76 €56	£52 $86 €63

DrDAQ



- **16 INPUTS, OUTPUTS AND SENSORS**
- **USB-CONNECTED AND POWERED**
- **USE UP TO 20 USB DrDAQS ON A SINGLE PC**

Whether you're a teacher, student, hobbyist or professional, the USB DrDAQ Data Logger gives you an inexpensive entry into the world of PC-based data logging.

MORE THAN JUST A DATA LOGGER

Thanks to the power of PicoScope, you can also use your DrDAQ as an oscilloscope and spectrum analyzer. Just run the supplied PicoScope software and your DrDAQ becomes a single-channel scope with 100 kHz bandwidth, 8-bit resolution and the ability to measure voltages up to 10 V.

SENSORS, LED AND DIGITAL I/O

With its built-in sensors for light, sound and temperature, you can start using your USB DrDAQ data logger straight out of the box. The USB DrDAQ also has an RGB LED that you can program to show any of 16.7 million colours.

Your USB DrDAQ also includes 4 digital input/outputs. In input mode these give you even more monitoring options. When used as outputs they enable you to use your DrDAQ to control external devices.

SPECIFICATION	DrDAQ		
Oscilloscope input	100 kHz, 8 bit resolution, ±1.25 V to ±10 V input ranges, BNC input		
Sound waveform	±100 units, 0.2 unit resolution		
Sound level	55 to 100 dBA, 1 dBA resolution, 5 dBA accuracy		
Temperature	-10 to +70 °C, 0.1° resolution, 2 °C accuracy		
Light sensor	0 to 100 units, 0.1 unit resolution		
RGB LED	16.7 million colours		
pH	0 to 14 pH, 0.02 pH resolution, accuracy sensor-dependent, BNC input		
Redox/ORP (Oxidation/reduction)	±2 V @10^{12} Ω, 1.2 mV resolution, accuracy sensor-dependent, BNC input shared with pH		
Resistance	0 to 1 MΩ, 250 Ω resolution @ 10 kΩ, screw terminal		
External sensors	0 to 2.5 V, 0.1 mV resolution, 1% accuracy, 3x FCC68 4/4		
Digital I/O	4 channels (screw terminals); 2 with 1 MHz pulse-counting input and PWM output; 0 to 5 V input, 3.3 V / 2.2 kΩ output		
Arbitrary waveform generator	DC to 20 kHz, 4 K samples, 10 bit resolution, BNC output		
Dimensions	77 x 70 x 23 mm (including BNC connectors)		
Part number	PP706 DrDAQ	PP707 kit	PP716 pH kit
Price	£79 $130 €96	£179 $295 €217	£119 $196 €149

For a full list of optional external sensors please visit www.drdaq.com

DrDAQ accessories

DD100
TEMPERATURE SENSOR
A high-accuracy general purpose temperature sensor with a 2 metre lead. Suitable for air, surface or liquid measurements.

DD011 PH ELECTRODE
The Pico pH sensor is a robust epoxy bodied pH electrode ideal for educational use. The pH sensor consists of a standard electrode capable of measuring the full 0 to 14 pH range. Supplied with storage solution to help prevent it drying out.

DD163
HUMIDITY SENSOR
The Humidity Sensor measures humidity using a 'non-condensing' technique. It has a 60 second response time and plugs into the external sensor connections of USB DrDAQ.

PP066 REED SWITCH
Used to detect the presence of a magnetic field such as from a bar magnet or an electromagnet. Alternatively, a simple external switch can be wired to the internal screw terminals. It has a fast response time of 2 ms so can be used as an alternative to a light gate for timing applications.

DD103 OXYGEN SENSOR
The oxygen sensor is used to measure the percentage of oxygen in a gas. The sensor plugs into the external sensor sockets of a USB DrDAQ using the supplied cable.

PP216
MAGNETIC INDUCTION KIT
Over 180 years ago British scientist Michael Faraday discovered electromagnetic induction - the "induction" or generation of electricity in a wire by means of the electromagnetic effect of a current in another wire. Now with the Pico Magnetic Induction Kit and a DrDAQ data logger you too can perform your own electromagnetic induction experiments.

Other Products

THREE-AXIS ACCELEROMETER AND OSCILLOSCOPE INTERFACE

The PP877 is a MEMS-based three-axis accelerometer and oscilloscope interface. It is supplied with 3 short BNC to BNC cables which plug directly into any PicoScope oscilloscope with 3 or more analog channels. High-resolution oscilloscopes such as the PicoScope 4000 Series are recommended to take advantage of their increased sensitivity.

- ± 5 g measurement range
- DC to 350 Hz frequency range
- Mounting magnet included
- 3 x BNC to BNC cables included

£249 $411 €301

PP877 Three-axis accelerometer specifications	
Weight (interface/vibration sensor)	120 g / 80 g
Dimensions Sensor interface (inc. BNCs) Magnet (inc. fitted grub screw)	105 mm x 65 mm x 27 mm 12 mm x ø18 mm
Battery (lithium primary cell)	CR123(A) included
Maximum measurable acceleration	±5 g
Output BNC	0-2 V DC coupled
Vibration frequency (3 dB)	DC to 350 Hz
BNC overvoltage protection	30 V
Shock survivability (sensor head)	10,000 g
Temperature range (operating) Sensor head	–40° C to 85 °C
Thread mounting (sensor)	1/4" x 28 UNF
EMC approvals	CE: Meets EN61326-1:2006
Output scaling	99 to 122 mV/g
0 g output (all axes)	0.85 to 1.15 V

AUTOMOTIVE SCOPE KITS

POWERFUL

We offer the automotive PicoScope 4000 Series scopes that turn your PC or laptop into a powerful automotive tool. The two main diagnostic techniques, ECU Fault codes and scopes, both have advantages but used together are very powerful. Scopes enable the actual signals to be viewed on your monitor ensuring a large high-quality display.

The kit can be used to test and measure virtually all of the electrical and electronic components and circuits in the modern vehicle, including:

- Ignition (primary & secondary)
- Injectors & fuel pumps
- ABS sensors, crank & cam sensors
- Starter & charging currents
- Lambda, airflow, knock & MAP sensors
- Glow plugs/timer relays
- FlexRay, CAN & LIN bus
- Relative compression tests

For more information please visit www.picoauto.com.

CUSTOMER COMMENTS

Uses a 3204A for: Microcontroller development.
Perfect handling, reliability, small and lightweight, good software
10 out of 10

Uses a TC-08 Thermocouple Data Logger for: Temperature and vacuum data logging for aerospace composites curing, as required by the FAA.
Dollar for dollar, the best data logging system "out there". Affordable, easy to set-up & easy to use!!
10 out of 10

Uses a 2000 Series for: Troubleshooting RS-485 networks.
I like the size of the scope. I can carry the scope in my laptop bag.
10 out of 10

Uses a 2205 MSO for: General lab use.
This piece of kit paid for itself on the first day of use by helping to solve a diabolical I2C bus problem that we had on a new board. Very pleased - can't think what you could do better.
10 out of 10

Uses a 3204 for: General lab and off-site work.
Nice unit. Does what I need it to do. Simple, quick set up and with the software updates adding new functionality a really useful piece of kit.
10 out of 10

Uses a 3205B for: Hobby electronic. Programming microprocessor interfacing. Audio amplifier construction, including tube technics. Ham radio experimenting.
The device fulfills all my existing requirements. There are more features than I can ever use.
10 out of 10

Uses a 5203 for: General laboratory signal measurement.
What I like best about Pico products is the constant improvement to the software.
Pico Technology Rocks!
10 out of 10

Uses a 4424 for: Process control troubleshooting, serial comm. troubleshooting, three phase power quality checks, hobby.
Continuing development of the software, along with dedicated support; makes for a scope that delivers ever increasing capability == maximum performance for the investment.
10 out of 10

Uses a 3204 for: Electrical systems integration / development / fault-finding.
Like best: the portability / size of the products. I carry a laptop to site; with a PicoScope in my bag,
I have a 'scope (with a 15" display and full functionality) ready to use.
9 out of 10

Uses a 4262 for: a Senior Design project on electronic noise suppression for shot-noise limited dual-beam measurements.
The Picoscope software is incredibly easy to use. I found the controls and menus to be intuitive, simple, and elegant.
10 out of 10

Uses a 2205 MSO for: Debug low level software i2c, spi, serial in ultra low power application environments (Bluetooth 4.0)
I like the performance/price ratio!
10 out of 10

ORDERING

Pico Technology supports a network of distributors in over 60 countries worldwide who are helping to build and maintain our enviable reputation in the industry. Details of your local distributor who will be happy to help you can be found at www.picotech.com/distributors.

Customers from the UK and those from countries without a local distributor can also place orders direct with Pico Technology by phone, fax or secure e-commerce.

We aim to despatch orders within 24 hours of receiving payment for products in stock from 9 am to 5 pm (Monday to Friday). UK business hours.

PAYMENT

We accept payment in Sterling, Euros and US Dollars. Payment is also accepted by credit card (Visa or MasterCard) or debit card (Maestro/Switch or Delta).

Please note that all sales are subject to our standard terms and conditions. Prices are correct at the time of printing but are subject to change without notice.

Please check the current euro and dollar prices on our website before ordering.

Errors and omissions excepted.
Prices are exclusive of tax, duties, delivery and other costs.

www.picotech.com

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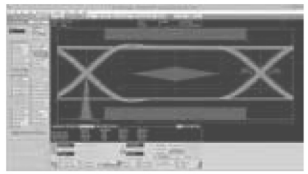

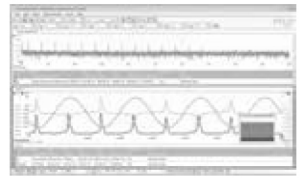


Pico Technology 한국대리점 (주)영일교육시스템

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